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The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

Published Every Thursday TULSA, OKLAHOMA, FEBRUARY 20, 1930 $6.00 a Year

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200,000 gal. elevated tank at compressor station.

10,000 bbl. Hortonsphere.

Oil agitators.

Outstanding Products

The ideals, experience, and facilities of this organization are your guarantee of satisfaction when you select the products illustrated. This company's line comprises Field Storage Tanks . . . Cylindrical Tanks . . . Wiggins Floating and Breather Roofs . . . Hortonspheres . . . Elevated Water Tanks . . . Rundown Tanks . . . Agitators . . . Absorbers . . . Bubble Towers . . . Condenser Boxes . . . Crude Stills . . . and refinery plate work of all kinds. Address our nearest office for information and quotations.

Bulk station marketing tanks.

Wiggins Breather Roof on 80,000 bbl. tank.

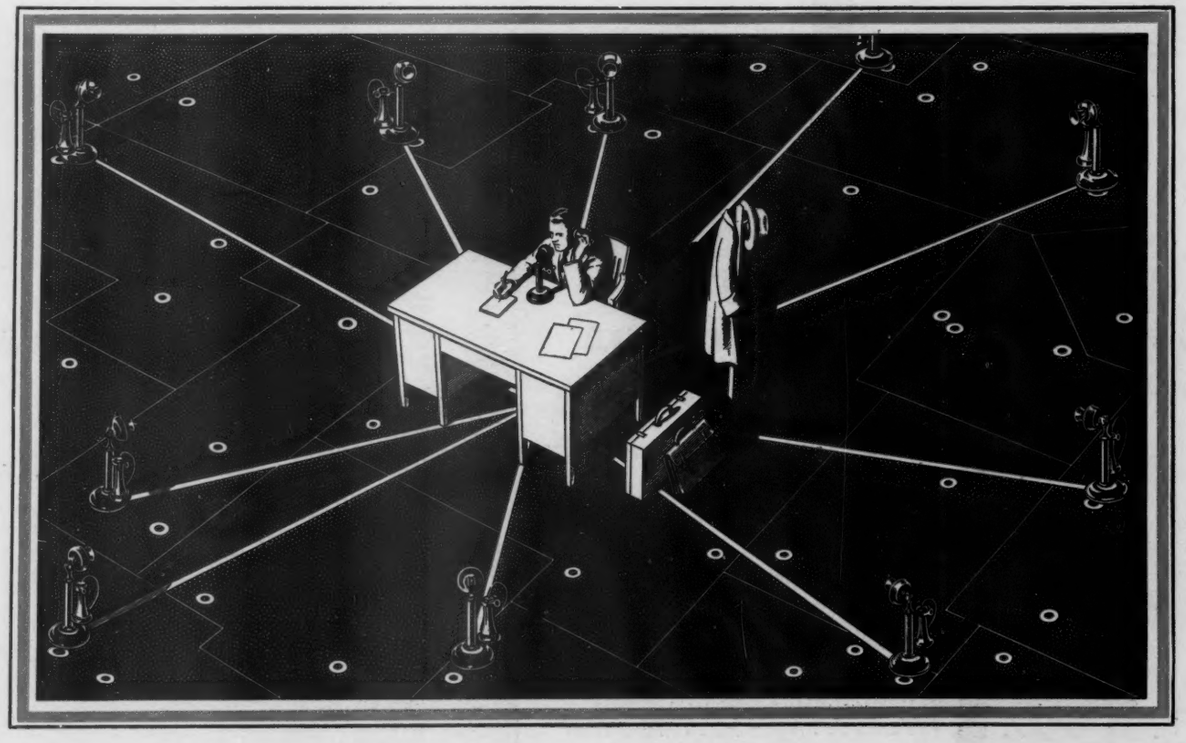
80,000 bbl. oil tank with Wiggins Floating Roof.

Chicago Bridge & Iron Works

DALLAS NEW YORK CLEVELAND CHICAGO DETROIT BOSTON PHILADELPHIA SAN FRANCISCO BIRMINGHAM

Advertisers' Index on Page 33 Table of Contents on Page 34

They Cover their Territory twice as often by Telephoning from Key Towns



A MANUFACTURING COMPANY, marketing its product nationally, was faced with serious competition. Its salesmen could visit customers only at intervals of several months. They could give little time to developing new prospects. Regional mills and other competitors were making deep inroads into its business.

A Key Town Plan of telephoning was presented to this company and adopted. Its use enables the salesmen to cover their territory at least twice as often, at proportionately lower cost.

The Key Town Plan is used by many business firms to meet modern conditions. Under this method, the representative goes to the key cities in person. From these he conducts his business in the surrounding area by telephone, buying and selling goods, building good-will, answering questions, adjusting complaints, quoting prices or specifications.

In this way he can cover territory far more quickly. Many business men alternate personal visits with telephone calls, visiting certain cities on one trip and telephoning nearby ones, and reversing the procedure the next.

There is now in effect a further reduction in various long distance rates, saving telephone users of the United States more than $5,000,000 a year. This is the fourth reduction within little more than three years. It is part of the fundamental policy of the Bell System, which is to provide the best possible telephone service at the least cost to the public. Out of town calls are *Quick . . . Easy . . . More economical than ever.*

BELL SYSTEM
AMERICAN TELEPHONE & TELEGRAPH CO.
AND ASSOCIATED COMPANIES

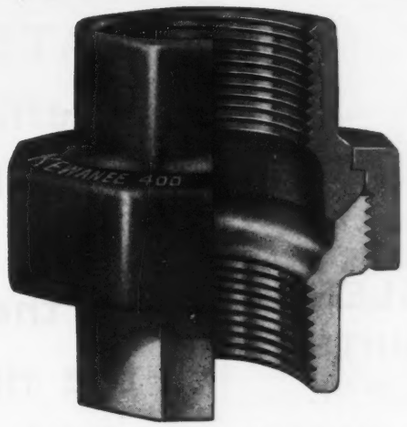
Standards of the Oil INDUSTRY

WALWORTH
VALVES
FITTINGS
AND TOOLS
for
OIL

KEWANEE FLANGE UNION

Available in all-iron for service in which fluids harmful to brass come in contact with the union.

NATIONAL HYDRAULIC UNION



KEWANEE "400" UNION

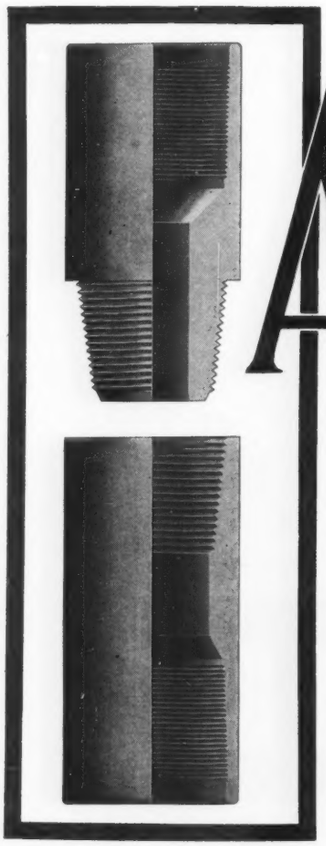
Available in all-steel for higher pressures and temperatures.

WALWORTH

Walworth Company, General Sales Offices: 51 East 42nd St., New York
Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa.; and Attalla, Ala.
Walworth Company Limited, 620 Cathcart St., Montreal, P. Q.
Walworth International Co., 11 Broadway, New York, Foreign Representative

. . . Distributors in Principal Cities of the World . . .

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879.



ACCURATE THREADING

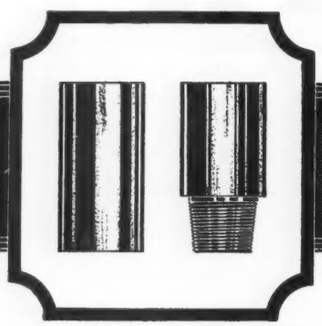
—gives less leakage

—assures greater pressure

—and coupled with the greater tensile strength of SPENGLER HEAT-TREATED TOOL JOINTS assures most efficient service possible in deep well drilling.

SPENGLER TOOL JOINTS Meet A. P. I. Specifications

From the crucible of the steel furnace to the rig in the field Spengler Tool Joints follow a scientific manufacturing treatment—that's why dependable drillers are recommending them.



SPENGLER TOOL CO.
OKLAHOMA CITY, OKLAHOMA
SPENGLER TOOL JOINTS MEET A.P.I. SPECIFICATIONS

THE BEST PIPE SHOPS are LANDIS EQUIPPED

LANDIS TRADE MARK

The best pipe shops in the oil country produce cleanly cut, well formed, correctly tapered threads as a matter of daily routine. These shops invariably use Landis Pipe Threading and Cutting Machines.

W. C. Norris, Manufacturer, Tulsa, Okla., maker of swedge nipples and bull plugs which are identified throughout the world by "Norris Quality", uses Landis Machines. Mr. Don Bowers, Manager, says "Aside from the quality of work turned out, we find our Landis installation very economical owing to the long life of the Landis chaser."

It is worth noting that *economical operation* is as essentially a part of the Landis Pipe Threading and Cutting Machine as its ability to produce accurate, well finished threads.

Write for our Catalogue No. 31—"Landis Pipe Threading Machine".

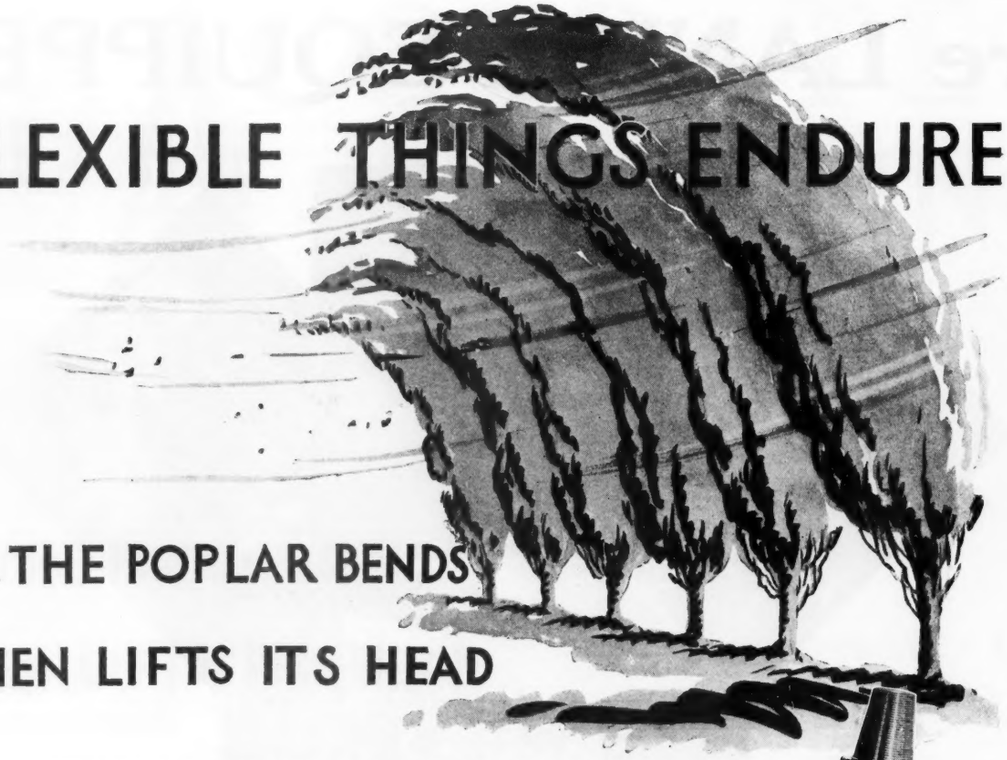
LANDIS MACHINE COMPANY, Inc.

Waynesboro, Penna., U. S. A.

Detroit Office—5928 Second Blvd.
Cleveland Office—504-505 Marshall Bldg.

REPRESENTED IN THE DOMESTIC OIL FIELDS BY: Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; D. S. Mair Machinery Co., Houston, Tex.; Woodward, Wight & Co., New Orleans, La.; Herberts Machinery & Supply Co., Los Angeles, Calif.; Herberts Moore Machinery Co., San Francisco, Calif.; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.

FLEXIBLE THINGS ENDURE



. . . THE POPLAR BENDS

THEN LIFTS ITS HEAD

. . . FLEXIBLE CUPS ON THE GUIBERSON SWAB GIVE WAY TO PROTRUSIONS . . . . LAST LONGER . . . . AND LIFT ALL THE FLUID

IN some winds a poplar tree sweeps close to the ground with its topmost branches, but when the wind has passed it returns to its graceful upright position without an ill effect.

When the flexible cups of a Guiberson Swab meet a protrusion or wrinkle in the casing, they give way, move gracefully over it and then resume their circular shape, pressed close against the casing wall, lifting all the load. When going in, these cups collapse, allowing far speedier passage into the hole. When pulling out, the weight of the load causes them to press firmly and more firmly against the casing wall, making a perfect seal. Specially composed rubber insures them against deterioration, even with weeks of use in high gravity oil. The superiority of this flexible swabbing principle has resulted in the Guiberson Swab doing most of the world's swabbing today.

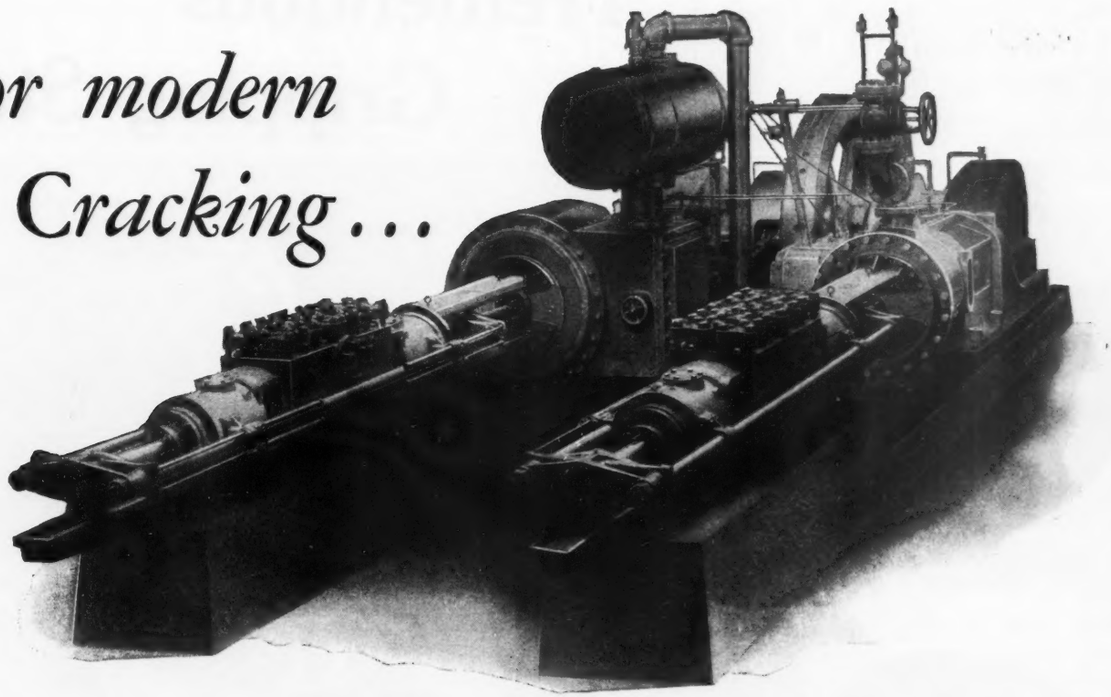
Fully Patented

"Better Be Safe Than Sorry"
THE GUIBERSON CORPORATION
Box 1106, Dallas, Texas
Calif. Branch: 1506 Santa Fe Ave., Los Angeles
621 Kennedy Bldg., Tulsa — 321 Osage St., Ponca City — 506 Trust Bldg., Newark, O.

GUIBERSON

BETTER BE SAFE THAN SORRY

For modern Cracking...



A Crank-and-flywheel Hot Oil Pump

by Worthington

IN adapting the crank-and-flywheel engine to hot oil pumping, Worthington has brought, to a modern problem, a solution based on long-established principles. Some of the outstanding advantages of this pump, as proved in highly successful installations are:

1. *It is safe:* The liquid end is made of a solid steel forging...the only commercial material which will withstand combined high temperatures and pressures.
2. *It is economical to operate:* Steam is used expansively and the full benefit of the energy stored in the flywheel is utilized.
3. *Its maintenance costs are low:* Positive flood lubrication of all bearing surfaces, totally enclosed frames which exclude dust and dirt, and stainless steel liquid valves and seats, insure long life with minimum wear and attention.
4. *It is reliable:* Because of its simplicity, it is able to operate 24 hours a day, 7 days a week, over long periods.
5. *It is flexible:* At normal, overload or underload conditions, it operates smoothly over a wide range of speeds.
6. *It is simple:* The entire design is free of complications. The Meyer steam valve gear, operated direct from the eccentrics, has no dash pots or valve latches to cause failure.

Write for further information on this important development in refinery equipment. Some interesting and conclusive figures on actual performance records are now available.

WORTHINGTON

PUMPS
COMPRESSORS
Stationary and Portable
CONDENSERS
and Auxiliaries
DIESEL ENGINES
GAS ENGINES
FEEDWATER HEATERS
WATER, OIL and
GASOLINE METERS

Literature on Request

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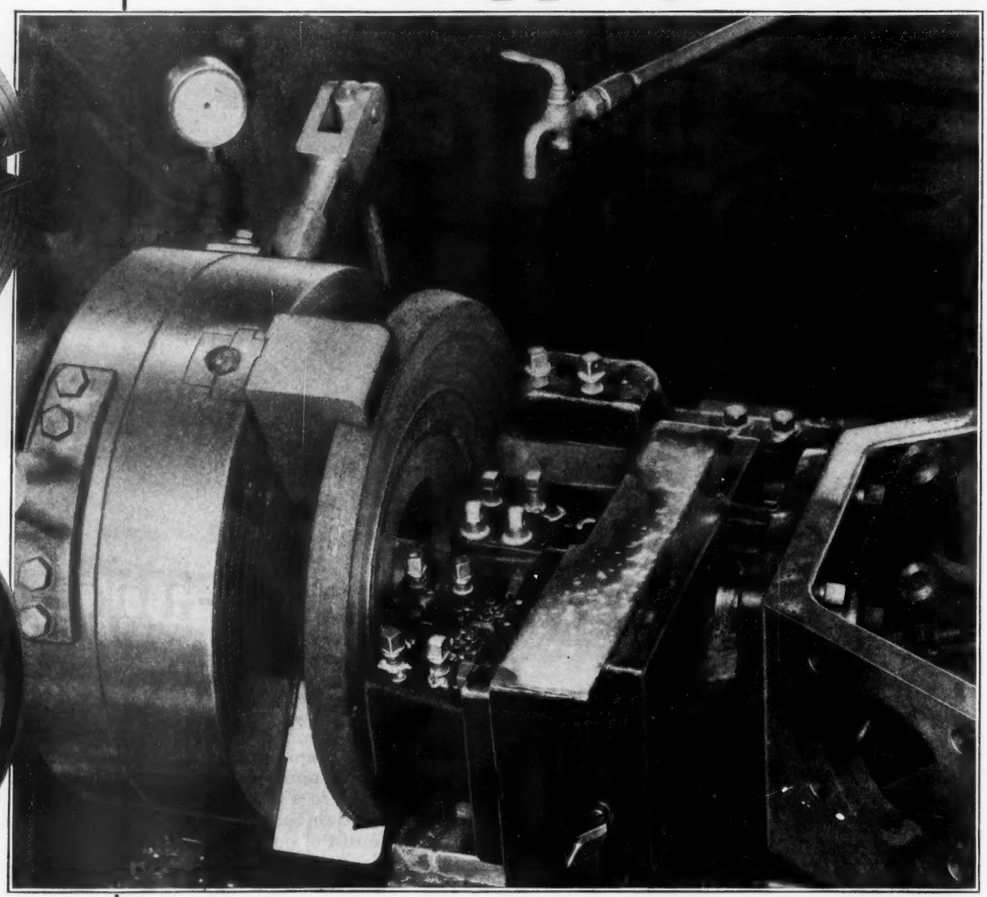
P-53

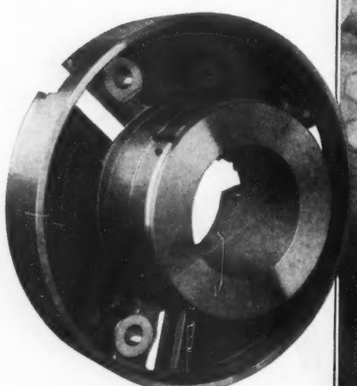
WORTHINGTON

Build with Steel Castings

Tremendous Gripping Strains

Face of the Foster-Barker chuck body





Rear view of the Foster-Barker chuck body

Realizing the problems confronting casting buyers, Sivyer periodically publishes new booklets on the intricacies and developments of steel castings. The latest is "Dependability in Steel Castings." Ask for a copy.

but no trouble or breakage

Whenever a manufacturer has a good name, or the sales volume that goes with a good name, to uphold, you are likely to find Sivyer among his important suppliers. For this Foster-Barker Chuck and Vise installation, the Foster Machine Company uses chucks' bodies cast in Sivyer Steel. Under hydraulic operation, especially, these units are subjected to tremendous, constantly gripping strains. Yet the Foster Machine Company reports no breakage or trouble with Sivyer Steel.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

THE CELEBRATED SKIP TOOTH DIE

(Genuine Nye)

REG. U. S. PAT. OFFICE

A LETTER FROM HARRY G. NYE

TO THE OIL MEN OF THE U. S. A.

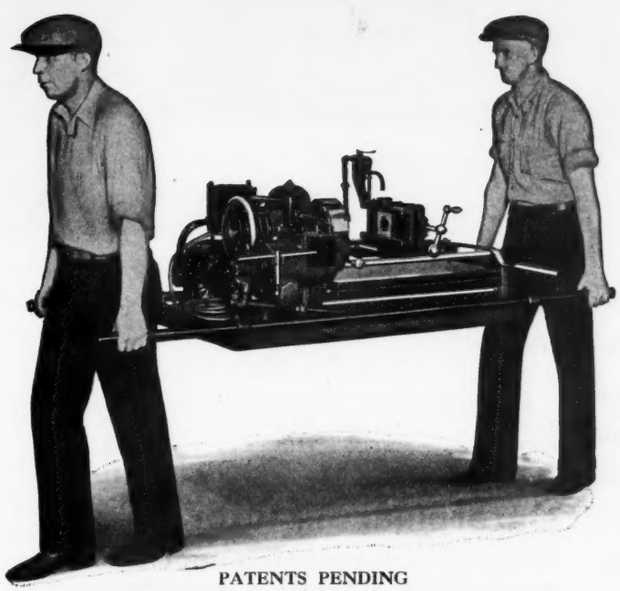
"IT WON'T BE LONG NOW," LITTLE WILLIE SAID AS HE SAWED OFF GRANDPA'S CRUTCH.

FRIENDS:

Well, it won't be long now before we will be taking the H., S. & J. when we want to go to California. (And who doesn't?) It takes four days now to get from Greenwich Village to Hollywood. (And a good deal longer if you are trying to break into the movies). But by taking the H., S. & J. you will be able to make it in two. Days, I mean.

The way it is now, four days is a long and tedious trip. Just think of it, four days to get from New York to San Francisco! And while you are just thinking, just think what our grand-dads would have thought of it. It took them four months on horseback, and a few months more in a covered wagon.

They probably cried all the way about the service, although they didn't weep and wail anything like we do now. Well, soon we will be able to make it in two days. Then I wonder what we'll want? We'll want to do it overnight, and then before bedtime, and then instantaneous. Do you know what the U. S. means? It means the Un-Satisfied.



PATENTS PENDING

"THE LIGHTWEIGHT CHAMPION"
POWER PIPE THREADING MACHINE
THREADS, CUTS OFF AND REAMS
CAPACITY ½ TO 2 INCHES

But the Hop, Skip & Jump by rail and air will be a great step forward, or hop rather. You will take a trainride and then a hop and skip, and then a trainride and a jump, and you will be there. The sleeper rides will be so you can get a little sleep, if you can, and the stops so you can get a little food, if you think you care for any.

The world now demands speed, which accounts for things like the H., S. & J., extra carburetors, petting parties, machine guns, pre-digested foods, forward passes, partial payments, bathrooms, market tips, fertilizer, divorce courts, auto-hearses, synthetic gin, minute steaks, and Nye pipe-cutting tools.

Just as the H., S. & J. will cut the time in two between Long Island and Los Angeles, so Nye Tools cut the time in two that it takes to cut a pipe in two. The oil man who wants speed wants Nye Tools.

Yours for speed,

HARRY G. NYE.

Otherwise Known As

The Nye Tool & Machine Works
4120-30 Fullerton Avenue Chicago, Ill.

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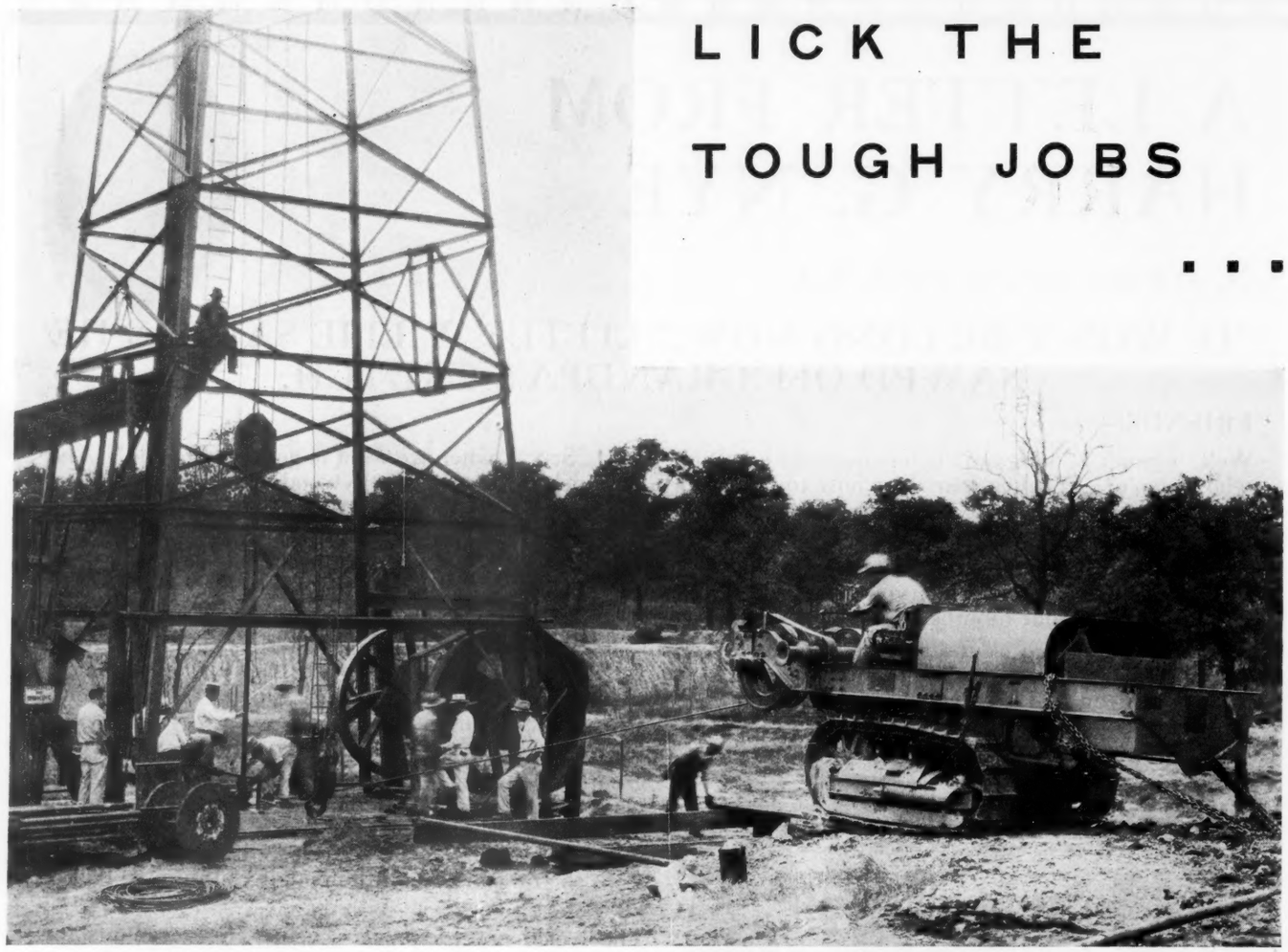
NYE TOOLS FOR SALE BY ALL LEADING SUPPLY HOUSES

"CATERPILLARS"

LICK THE TOUGH JOBS . . .



REGULAR equipment couldn't pull the 4-inch tubing that was stuck in this Oklahoma well—a "Caterpillar" Sixty equipped with an All Steel Winch conquered the job in jigtime. The "Caterpillar" track-type Tractor, fitted with a winch, is endlessly useful to the oil producer—handling the tough jobs and doing routine work *better, quicker, cheaper!*

. . .

Prices—f. o. b. Peoria, Illinois

TEN	$1100	TWENTY	$1900
FIFTEEN	$1450	THIRTY	$2375
SIXTY	$4175		

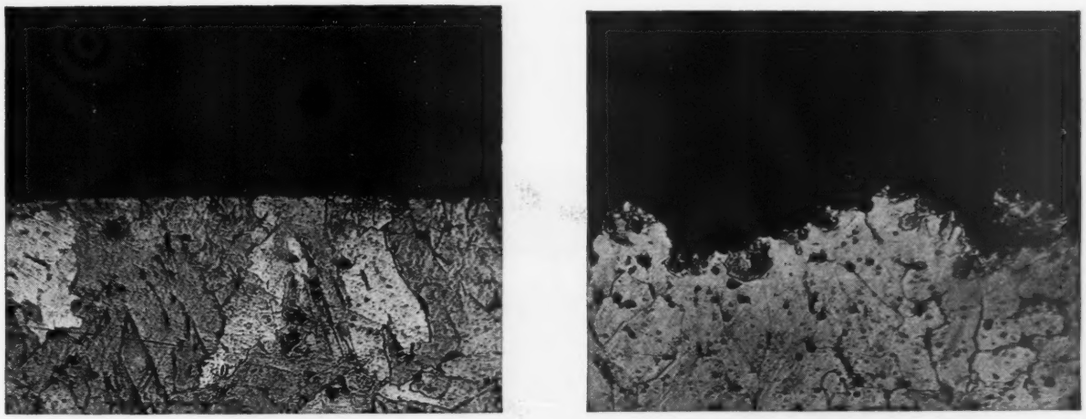
Caterpillar Tractor Co.

PEORIA, ILL. *and* SAN LEANDRO, CALIF., U. S. A.

Track-type Tractors ✓ Combines ✓ Road Machinery

(There's a "Caterpillar" Dealer Near You)

CATERPILLAR
REG. U. S. PAT. OFF.
TRACTOR



The left-hand unretouched microphotograph shows a cross-section of the shell of new steel line pipe. The photograph at the right shows the destructive effect of corrosion on unprotected pipe after it has been in the ground. Photographs have been enlarged 250 times.

When *CORROSION* attacks your pipe line

Most line operators realize the importance of giving the pipe a protective coating to ward off the inevitable menace of corrosion. But there are coatings *and* coatings.

For 23 years Hill, Hubbell & Company have specialized in the manufacture of protective coatings for metal, and oil and gas lines in particular. The fruit of their continuous research and experiment is a group of products called Biturine Coatings—Biturine Enamel; Biturine Enamel Primer*; Biturine Solution No. 5; Biturine 70-30; Biturine Coupling Solution. Biturine Enamel Primer can be obtained with Inhiburine.

Biturine, the base from which Biturine products are made, is not like other bituminous coatings. It is composed largely of sulphur-free coke oven pitch run to our own specifications and blended skilfully at high temperatures, with refined natural asphalts. The mixture is then processed to form a perfect chemical union of these Bitumens, resulting in a product proof against acids and alkalis and incapable of absorbing moisture.

The final test of any coating is the record in actual use. Thousands of miles of oil and gas lines protected by Biturine are in use today.

Our nearest office will be glad to furnish you with a list of Biturine users and specific instances where Biturine has added longer life to pipe lines.

*INHIBURINE

This entirely new inhibitor with extraordinary anti-corrosive powers is now being incorporated into Biturine Primer whenever specified. Being solvent in Bitumens it becomes an integral part of the priming coat and thereby functions as a second line of defense against corrosion should the Biturine Enamel Coating be penetrated.

BITURINE COATINGS

Biturine Enamel — Biturine Enamel Primer*
Biturine Coupling Solution
Biturine Solution No. 5 — Biturine 70-30

Biturine Enamel Primer can be obtained with Inhiburine

GET THE FACTS

About machine coated, machine wrapped pipe *at the mill.* A new and exclusive Hill, Hubbell & Company process now available for the production of six leading pipe mills. Biturine coatings are particularly adapted for use with this process.

GENERAL PAINT CORPORATION

HILL, HUBBELL & COMPANY DIVISION

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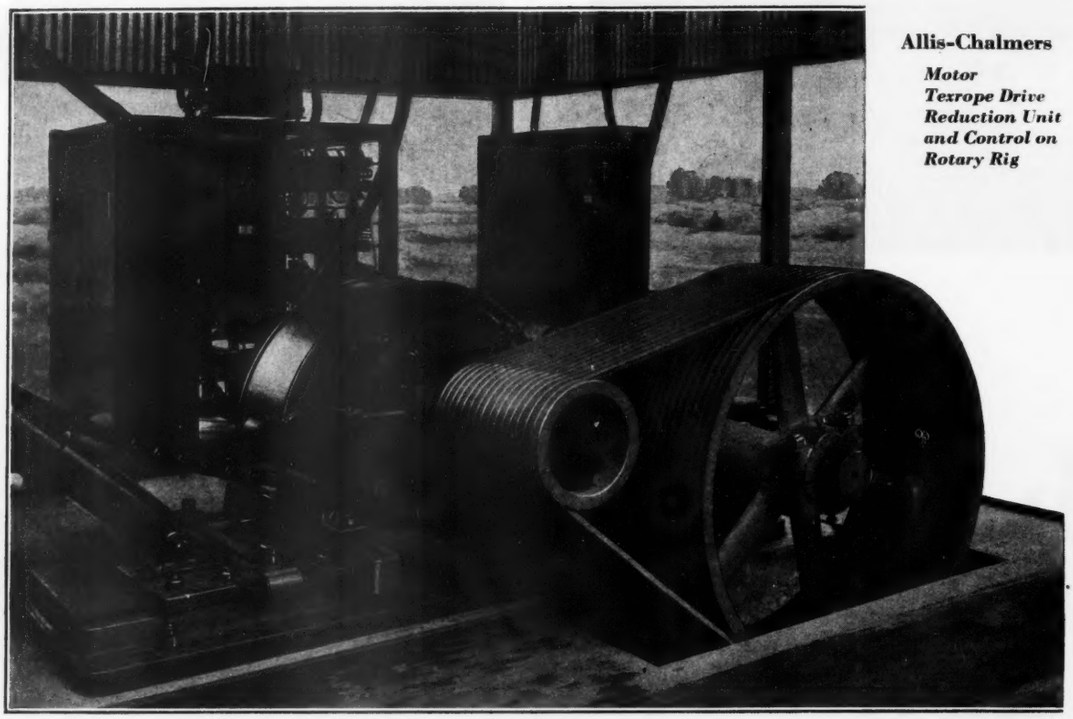
LOS ANGELES PORTLAND SEATTLE SPOKANE

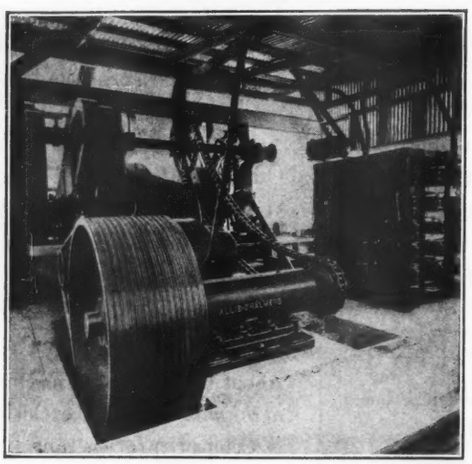


Allis-Chalmers

Motor Texrope Drive Reduction Unit and Control on Rotary Rig

An improved power unit

for rotary drilling



THIS new type of hookup for the power end of rotary drilling rigs utilizes several recent developments that not only make a simpler unit possible but also make it far more trouble proof and easier to operate. This development is the result of months of research into the need for a hookup that would eliminate the complicated system of wiring and control generally in use.

The motor used with this rig is the new and peppy Allis-Chalmers drilling motor. It is of the wound rotor high-torque type and is protected with splash proof covers. The drive is through a standard Allis-Chalmers Texrope single reduction unit. The control is of the full magnetic type with time delay acceleration.

Attention is called to the metal cabinet at the right of the control unit. This contains a fully protected instrument panel, instrument transformers, and the disconnect switch, connected through solid busses. This eliminates all of the complicated and troublesome wiring generally used in connecting the instruments. When hooking up a new rig only a few simple connections are necessary.

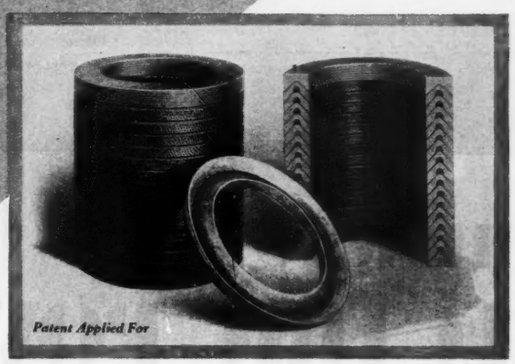
Three conductor cable, the outside of which is solid rubber vulcanized, is used in wiring this rig. This type of cable is weather proof and is easily handled.

A-C oil field specialists, appreciating the problems encountered in drilling wells and pumping oil, are at your service.

ALLIS-CHALMERS

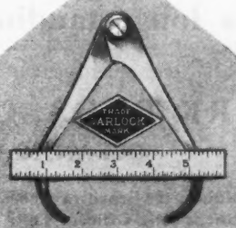
Allis-Chalmers Manufacturing Company, Milwaukee

GARLOCK-430
Chevron Packing



The greater the pressure the tighter it packs!

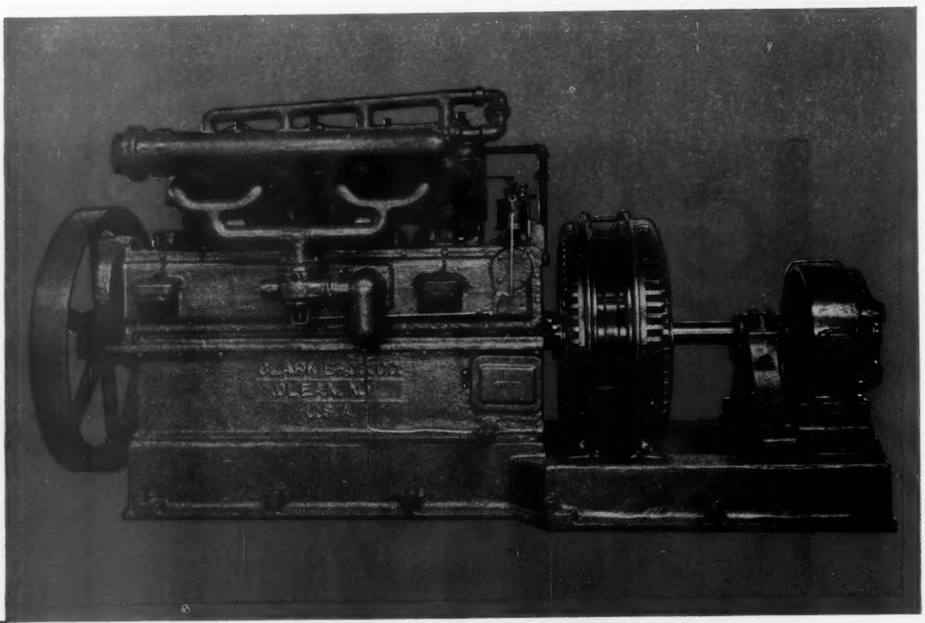
GARLOCK—430 Chevron Packing is an automatic packing designed and recommended for service on the rams and plungers of accumulators, presses, pumps and other heavy duty hydraulic equipment. (For high temperatures specify Garlock 530.)



THE GARLOCK PACKING COMPANY, PALMYRA, N. Y.

A World Wide Organization with Sales Offices and Warehouses in all Principal Industrial Centers

CLARK 4 Cylinder VERTICAL GAS ENGINE with Direct... ... Connected GENERATOR and Direct Connected EXCITER



SPECIFICATIONS

ENGINE

Four Vertical Cylinders
90 Brake H. P. at 400 R. P. M.
Uses natural gas or gasoline

GENERATOR

75 k. v. a.—400 R.P.M. usually 480 v.—
3-phase—60 cycle—
with direct connected exciter

Floor space 11½'x53"
Weight 15,000 lbs.
Height 78"

Generate Your Own ELECTRIC POWER at Minimum Cost

The CLARK Generator Unit is easily transported to any place where you would like to turn cheap gas into inexpensive electric power. Many operators are finding that this compact, durable and dependable unit fills a long standing need.

CLARK BROS. COMPANY
OLEAN, N. Y.

Export Offices: 150 Broadway, New York City.
Mid-Continent Sales Offices: Tulsa and Ft. Worth.
Warehouses: Tulsa, Oklahoma; McCamey and Sweetwater, Texas; Artesia, N. M. California: Smith, Booth, Usher Company, 228 S. Central Ave., Los Angeles.

Compressors and Gas Engines

CLARK

make use of our
EXPERIENCE
in
building
and
operating

SULPHURIC ACID PLANTS

SAFEGUARD your acid costs and insure continuity of satisfactory operation by making Sulphuric Acid in a tried and proved Leonard contact plant. Our plants are designed on data obtained in the actual operation of acid plants and are guaranteed to work under the conditions peculiar to your location and requirements.

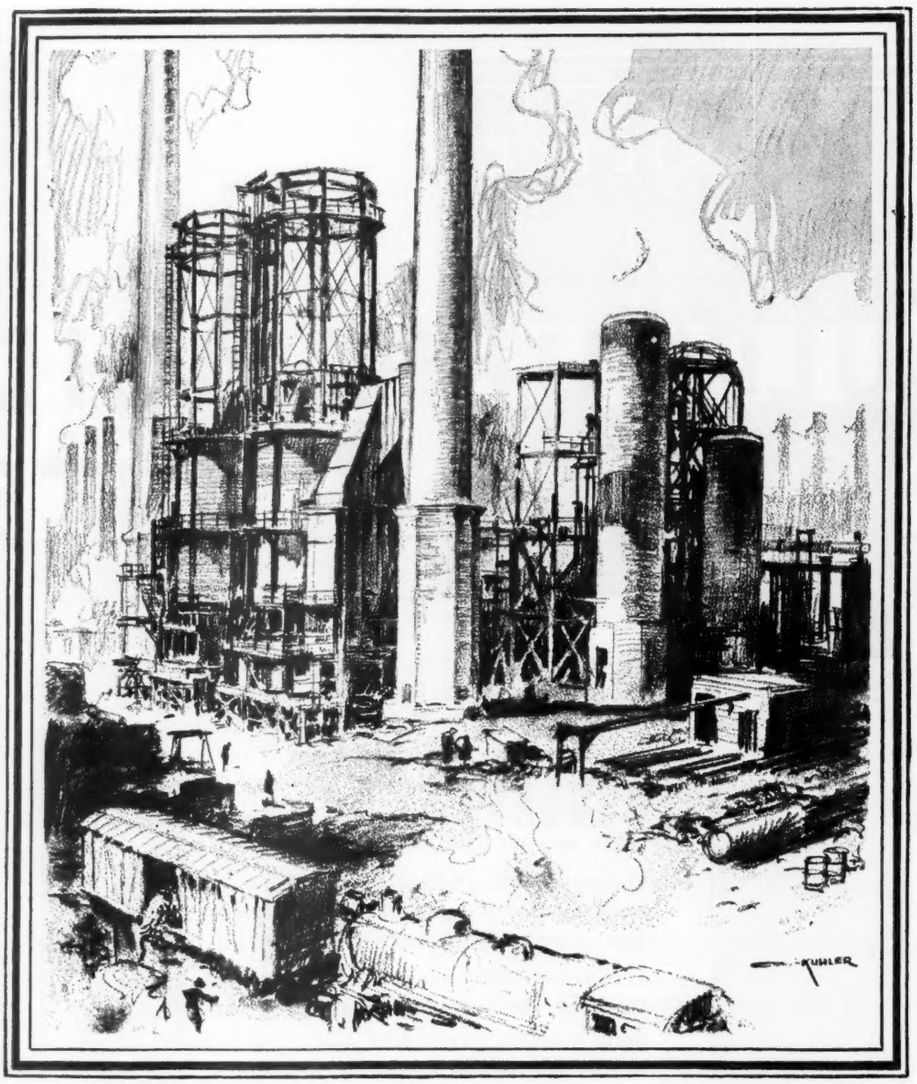
Our experience over fifteen years, designing and building acid and chemical process plants assures you of a steady, dependable production of acid.

Leonard contact plants use Monsanto Vanadium Catalyst, the first commercially successful vanadium catalyst licensed to acid manufacturers in the United States.

Old contact plants can be remodeled economically and platinum catalyst replaced to advantage with vanadium.

Write for details and our estimate on a plant to meet your requirements.

LEONARD CONSTRUCTION CO.
37 South Wabash Ave.
CHICAGO, ILL.



Kellogg MEETS THE EXACTING DEMAND FOR GREATER ECONOMY IN PROCESSING

Based upon laboratory studies of the charging stock, each Kellogg design for refinery equipment is sound in principle, and planned for maximum thruput. Added to this is the value of high-grade materials and workmanship—providing the satisfaction and economy of unfailing performance.

The M. W. KELLOGG COMPANY

225 Broadway, New York

LOS ANGELES, CAL., 1031 SOUTH BROADWAY TULSA, OKLA., PHILTOWER BUILDING

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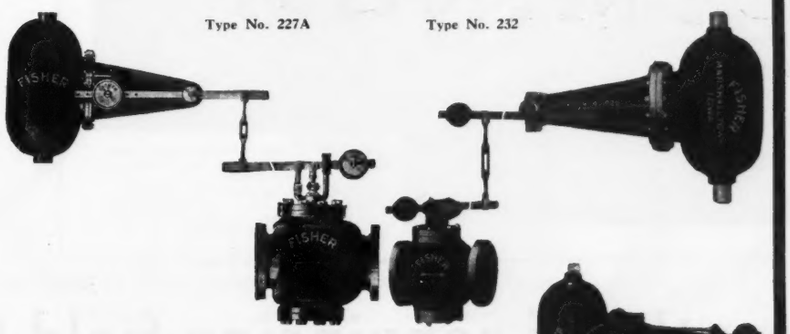
LIQUID LEVEL CONTROLLERS

FISHER



TYPE No. 227A

A liquid level controller or regulator for holding a predetermined level of liquid in such apparatus as stills, absorber towers, receivers, pipe lines, heaters, condensers, closed tanks, etc., where an external float is preferred. It is applied to all equipment where baffle plates, condenser tubing, internal piping, and other obstructions prevent the placing of a float inside the vessel holding the liquid.

TYPE No. 232

Ball bearings of both the thrust and radial types are used in this controller to reduce the friction to an absolute minimum. The bearings absorb the unbalanced pressure thrust on the two stems and permit their frictionless rotary movement. Standard greasing connections, felt washers, and external construction provide these bearings with suitable lubrication and protection from grit, rust, water, and corrosion and meet all existing service conditions. (Patented 9-14-1926.)

TYPE No. 240

For service as a liquid level controller on installations where valve must be placed a considerable distance from the float cage. It is also used where piping, walls, I-beams, and other obstructions prevent the direct connection of float cage to a lever valve by means of the usual lever connections. The valve may be positively controlled when placed at any distance up to 75 feet away from the float cage.

FISHER GOVERNOR COMPANY
Marshalltown Iowa

The FISHER LINE *for* SERVICE *every time*

Steam Pump Governors
[10 to 10,000 lbs.]
Boiler Feed Pumps
Fuel Oil Pumps
Vacuum Pumps
Receiver Tank Pumps
Pump By-Pass Valves
electric and power driven pumps
Reducing Valves, Pressure Regulators
for all pressures—liquids, gases, steam
Differential Pressure Regulators
Vacuum Regulators
Strainers
pipe, suction and drip pocket
Liquid Level Controllers
direct and remote type
Lever Valves
air, gas, or liquid
Float Valves
Fluid Mixers
Hydraulically Operated Valves
Relief Valves
Back Pressure Valves
Steam Traps—Air Traps—Gasoline Traps—Grease Traps
Exhaust Heads
Steam and Oil Separators
Drip Pockets
Vapor Pressure Controllers
for oil storage tanks
Boiler Gas Fuel Governors
Gas Engine Fuel Regulators
Automatic Gas Relief Valves
Gas Pressure Regulators
main and house service
Liquefied Petroleum Gas Regulators
for gas cylinders
Gas Water Traps

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INC.
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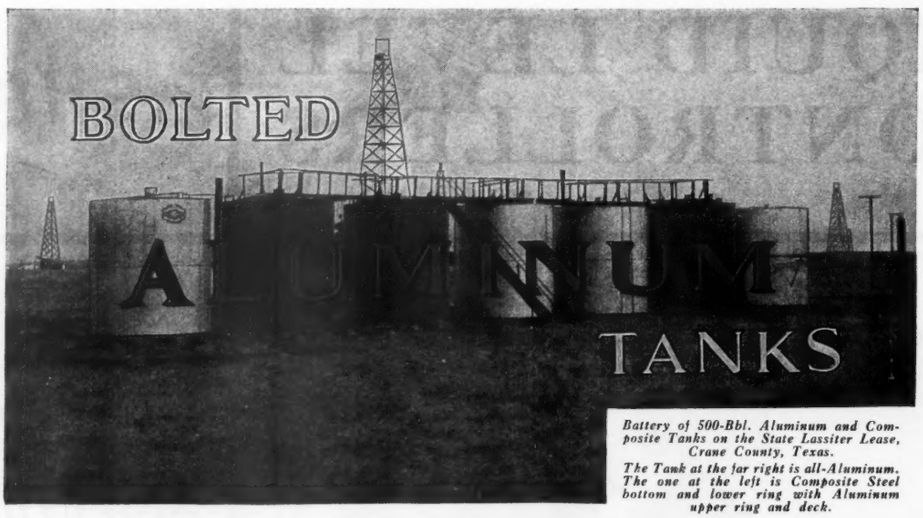
HOUSTON FORT WORTH DENVER

PARKERSBURG PIONEERS



Battery of 500-Bbl. Aluminum and Composite Tanks on the State Lassiter Lease, Crane County, Texas.
The Tank at the far right is all-Aluminum. The one at the left is Composite Steel bottom and lower ring with Aluminum upper ring and deck.

Now, after 18 months of convincing field tests,

PARKERSBURG RECOMMENDS BOLTED ALUMINUM TANKS

to combat the destructive corrosion of hydrogen sulphide. *Write for Bulletin SA.*

THE PARKERSBURG RIG AND REEL CO. MADE IN U.S.A.

Trade Mark Reg.

PROGRESS is vital in this business of producing oil. One by one, as problems arise, they are met and conquered, and now Parkersburg brings to the industry Aluminum Tanks which successfully combat corrosion.

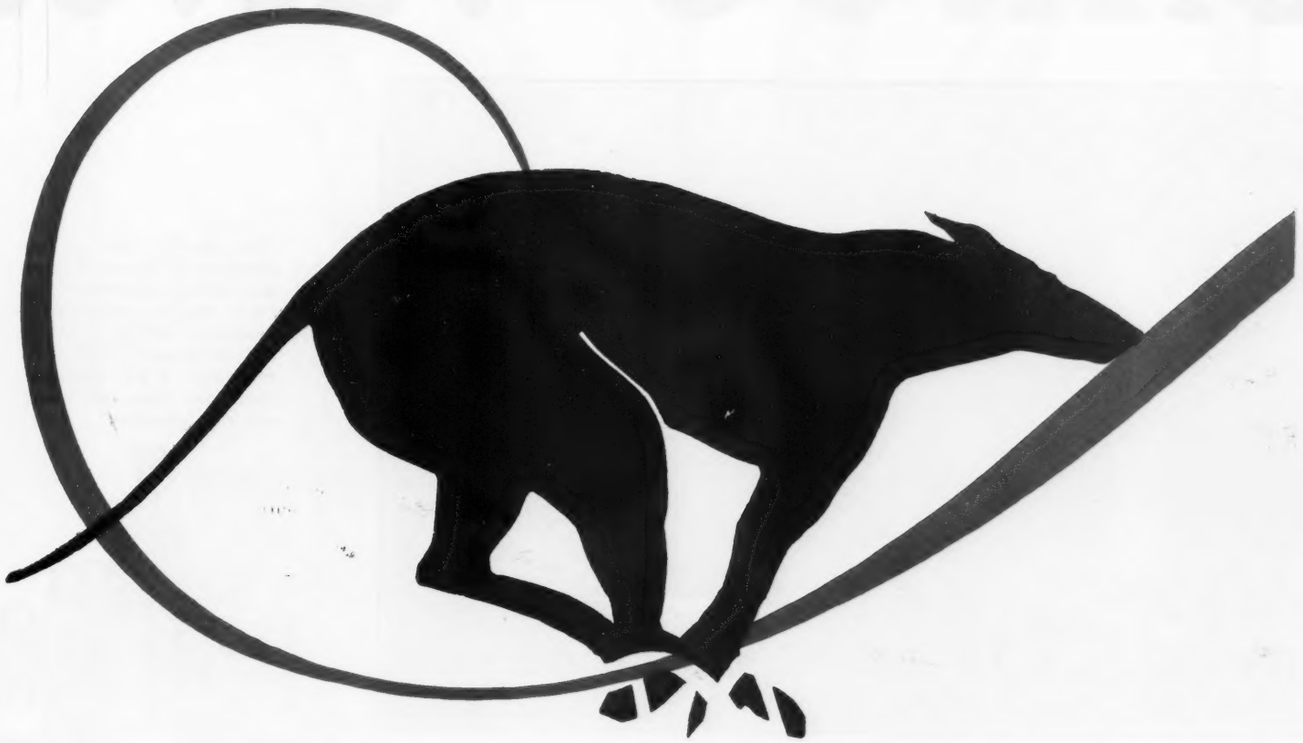
From definite data established in field tests, Parkersburg Aluminum and Steel & Aluminum Composite Tanks have proven real economy in districts where sulphur or certain severe corrosive conditions are present.

In Parkersburg Bolted Aluminum & Composite Tanks will be found the same excellent workmanship, the same precision in manufacture, that characterize Parkersburg Bolted Steel Tanks.

Call on nearest Representative.

THE PARKERSBURG RIG & REEL COMPANY

EXECUTIVE OFFICES AND MAIN PLANT
PARKERSBURG, WEST VA.



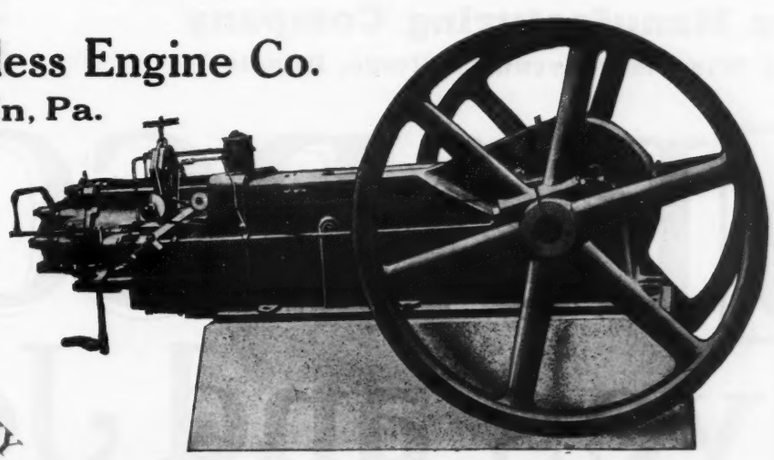
SPEED

Among other attributes of the Franklin Valveless OF Oil Drilling Engine is that of speed—under all cable tool drilling conditions. Coupled with a simple ruggedness without surplus weight, and plus exclusive design that works for high efficiency and unusual fuel economy, the OF invites your most exacting investigation. 40—50 and 80 H.P.—the best buy in the market—a test proves it!

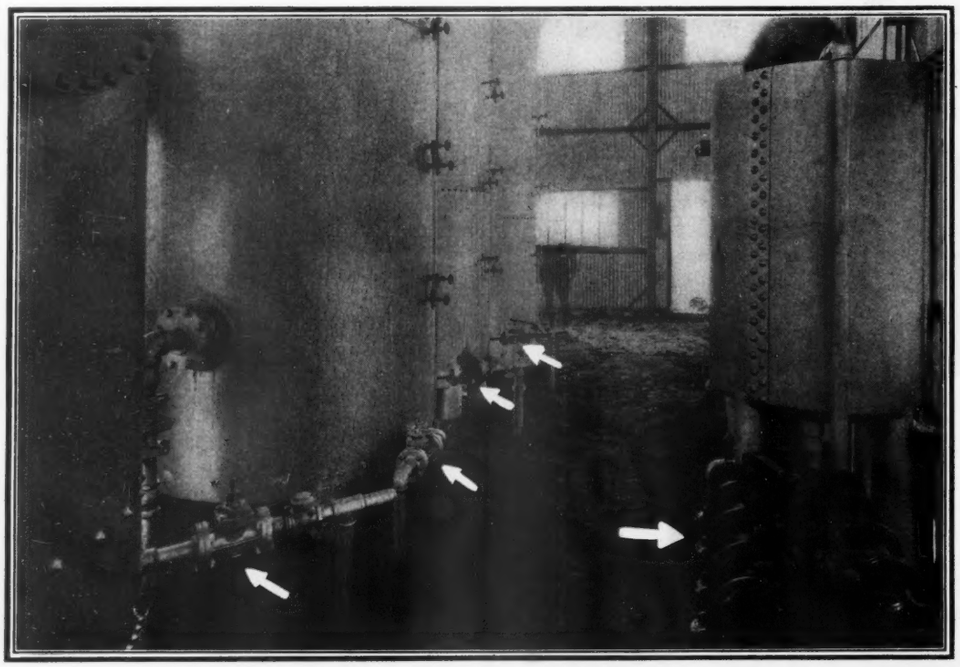
Franklin Valveless Engine Co.

Franklin, Pa.

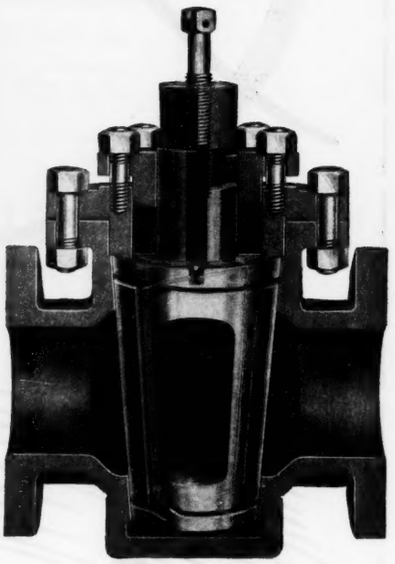
Distributed by OIL WELL SUPPLY COMPANY



BARCO Valves



The double lubricating channels of Barco Valves are blind, connected to the main lubricating channels ONLY when out of contact with line pressure. The pressure therefore does not wash out the lubricant.



for "foolproof" service

USERS of Barco Lubricated Plug Valves consider them practically "foolproof" because there is no danger of the plug blowing out when the valve is repacked under pressure. They don't have to "fool around" with valve leaking or sticking. Barcos are made absolutely tight by fine lapping and machining and can be adjusted to any degree of ease of operation. And users save money on maintenance because the lubricant in Barco Valves is used only on the wearing surfaces and cannot be washed out by line pressure.

Write for full information and prices.

Barco Manufacturing Company
1801 Winnemac Avenue, Chicago, Illinois

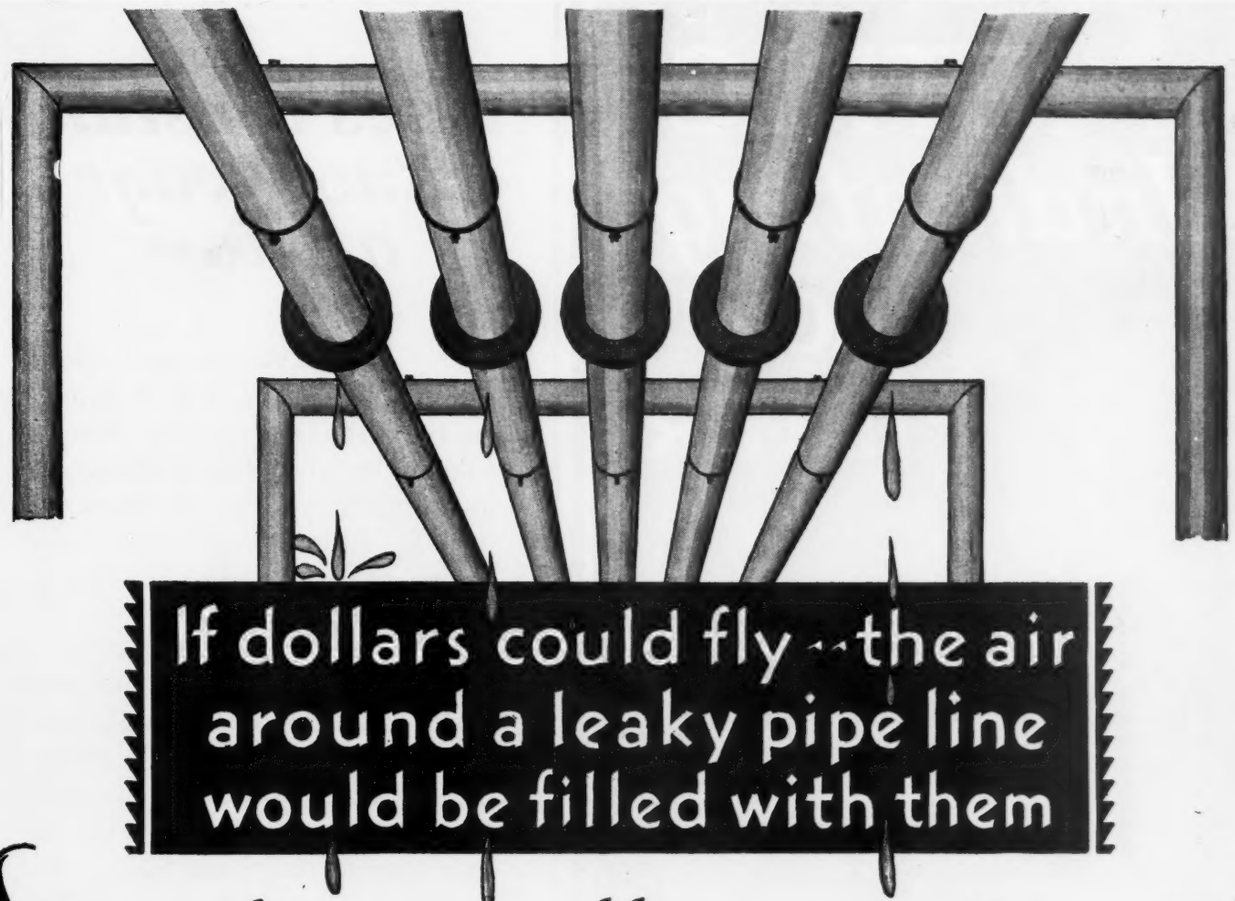
Agents:

Vinson-Canter Co., Tulsa, Okla.
The Steam Supply & Rubber Co. Seattle, Washington
Herbert Wolcott El Paso, Texas
M. N. Dannenbaum Co. Houston, Texas
Greene Brothers Wichita Falls, Texas
Petroleum Equipment Company Los Angeles, Calif.

BARCO

Valves and Joints

OGJ 2-20 Gray



Stop this needless waste with

ARCO METAL PIPE

Leaky pipe lines waste dollars because they lose oil—refined oil—worth much more than crude. Every pipe line leak is a dollar waster. If dollars could fly, the air around a leaky pipe line would be filled with them! Every leaky rundown or transfer line is costing you money. But you can easily stop this loss from corroded lines. Simply install ARCO METAL PIPE. It has solved the pipe line leak problem for others—will do the same for you.

What is ARCO METAL PIPE? A thin-walled cast-iron pipe of special formula, exceedingly close grained and remarkably resistant to corrosion without and within. It is made in steel pipe sizes and can be cut, threaded or welded exactly the same as ordinary pipe, and with the tools you have on hand.

Write today for complete information about this remarkable pipe which effectively solves pipe problems. Address our nearest office.

Arco Metal Pipe is distributed to the oil industry by the National Supply Companies and Crane Co., and is carried in stock in the following stores of the National Supply Co.:

Augusta, Kans.
Beaumont, Tex.
Blackwell, Okla.
Borger, Texas
Charleston, W.Va.
Cushing, Okla.
Duncan, Okla.
Eldorado, Kans.

Ft. Worth, Texas
Muskegon, Mich.
Newark, Texas
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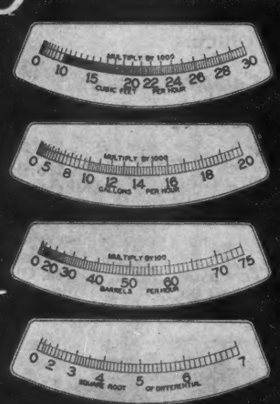
METRIC *Indicating* FLOW METER

Any Dial you need!


MULTIPLY BY 1000
0 10 15 20 22 24 26 28 30
CUBIC FEET PER HOUR
MULTIPLY BY 1000
0 5 8 10 12 14 16 18 20
GALLONS PER HOUR
MULTIPLY BY 100
0 20 30 40 50 60 70 75
BARRELS PER HOUR
0 2 3 4 5 6 7
SQUARE ROOT OF DIFFERENTIAL

can be furnished

-gives constant knowledge of flow

CAN you conduct plant operations more intelligently by having constant knowledge of the rate of flow? Metric Indicating Flow Meter recommends itself for all locations where closer control can result in higher operating efficiency.

¶Refineries that use this Meter have an always visible, reliably accurate picture of what is going on inside all major pipe lines. Dial numbers are large enough to be visible from a considerable distance. Any type of dial is available, graduated for any desired reading.

¶Reading requires no calculations.

¶Orifices are provided to suit the type of connection (flange or 2½ and 8).

¶In operation this Meter meets Metric standards for accuracy.

New and profitable applications for Flow Meters are being worked out constantly. Our advice and recommendations are always available without obligation. A survey of your plant may reveal many places where accurate flow registration will pay. Ask us for suggestions.

AMERICAN METER CO
MEASUREMENT ENGINEERS
CUBIC FEET

METRIC METAL WORKS
ERIE, PENNSYLVANIA
IRONCASE, TINNED STEEL CASE and ORIFICE METERS

AMERICAN METER COMPANY
INCORPORATED
The World's Largest Manufacturers of Gas Meters and Allied Apparatus
ESTABLISHED 1836
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SHOULD YOU *make the* FUTURE PAY *for* TODAY'S NEGLECT?

EVENTUALLY every unprotected pipe line will fail from corrosion and nothing else. ***Bitumastic Enamel*** prevents corrosion and costs relatively little to apply. It puts off the necessity of reconditioning for many years.

In hundreds of installations on thousands of miles of pipe, during a period of over forty years, ***Bitumastic Enamel*** has saved many times its original cost. As years go by and trouble-free continuity of service accumulates, its savings multiply.

It is true that something can be saved by neglecting to apply this proven protection when a line is laid. Inevitably, however, the future will be filled with maintenance expense that grows greater year by year. Is it wise to waste on future maintenance that which could be saved by a small initial investment?

"The Protection of Oil and Gas Lines" will soon be off the press. Please send for your copy.

BITUMASTIC

REG. U. S. PAT. OFF.

ENAMEL

WAILES DOVE-HERMISTON CORPORATION, 17 Battery Place, New York
Philtower Bldg., Tulsa

Philadelphia Cleveland Chicago Houston San Francisco

When You're Talking About Core Barrels— BAKER is a Mighty Good "Buy" Word

Operators all over the world are using the Baker Cable Tool Core Barrel — Russia, Australia, Mexico, far-away Papua — because they have found that it gives unusual service and is built so strong in every particular that it will "stand the gaff".

These operators know, from experience, that they can depend upon the Baker Cable Tool Core Barrel to bring to the surface a maximum percentage of perfect, uncontaminated core, no matter what the type of formation in which they are drilling.

There are two kinds of very important information which make coring necessary: 1. The lithological character of a formation can be ascertained more readily and more accurately than in any other way. 2. Many characteristics of formations and minor structural features are utterly lost in cuttings, but revealed perfectly in an uncontaminated core.

The Baker Cable Tool Core Barrel is noted for its efficiency and economy of operation, and for its effectiveness in coring in any type of formation.

We have prepared a 16-page treatise on the Baker Cable Tool Core Barrel which is interesting, informative, and valuable. It is yours for the asking.

Sample of cores taken with Baker Cable Tool Core Barrel in medium to fairly hard formations.

Your Guess May Be Good—But Coring Means Positive Knowledge of Formations

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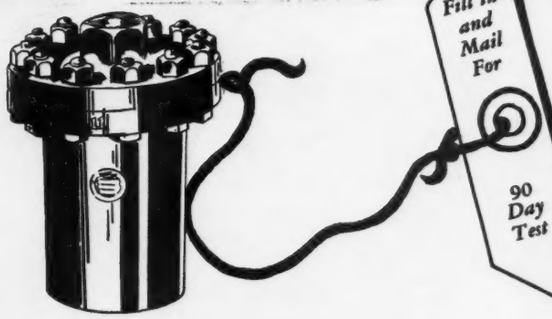
Baker Standard Core Barrel is Universally Accepted as the Standard of Coring Performance

Stocks carried by Dealers in all active Mid-Continent fields.

Test this high pressure steam trap for 90 days FREE



KNOWING that the performance of Armstrong Steam Traps speaks louder to you than all the claims we can make, we extend to you the privilege of testing the new Armstrong Forged Steel Trap in your own refinery or gasoline plant for 90 days, without cost to you or obligation. You can test other models also, and as many as you like. At the end of the period return the traps, collect.

You are the judge. Verify the following findings that a jury of thousands of users has returned:

—they discharge oil, scum and sediment with the condensate.

—they do not become air-bound and are self-scrubbing.

—they are self-contained; all working parts inside the body.

—Small radiation surface.

—they have larger capacity—pounds of water discharged — than any other trap of equal size.

—they operate without attention (for years).

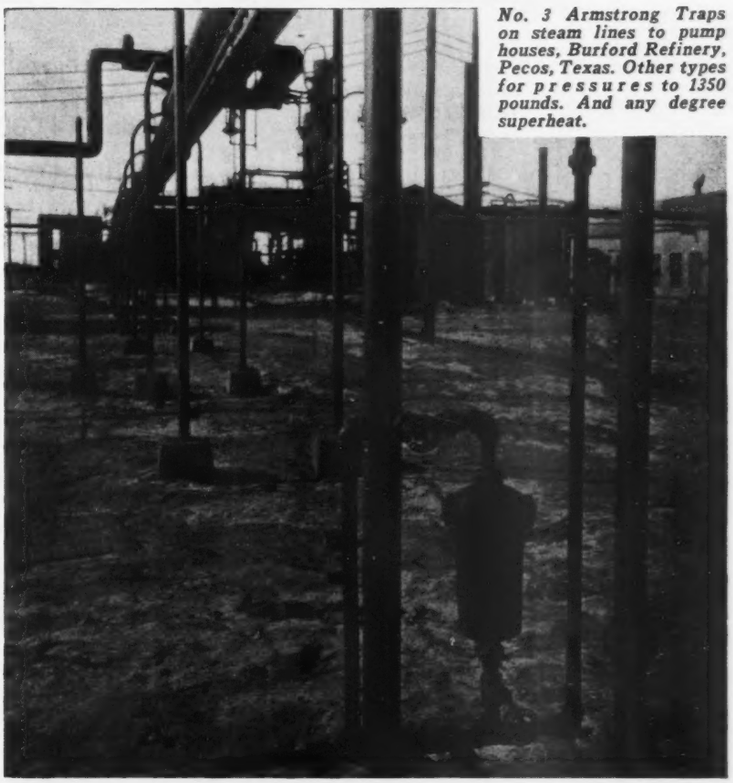
The tag is all we require for shipment. Just fill out and mail.

Armstrong Machine Works

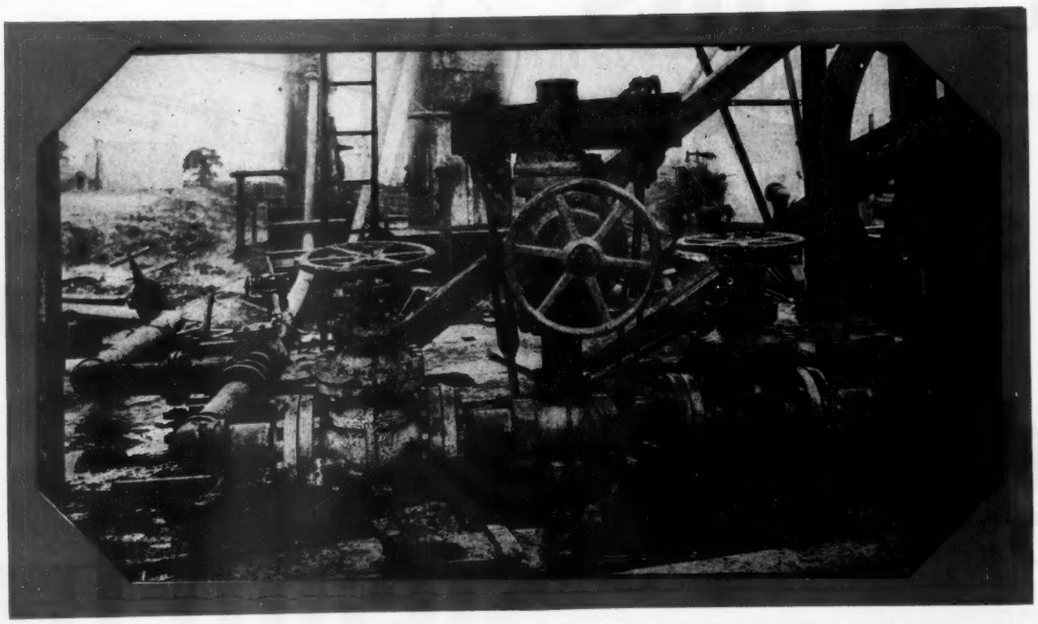
368 Maple Street, Three Rivers, Michigan

District Representatives in 42 Cities

O&GJ 2-20 Gray



No. 3 Armstrong Traps on steam lines to pump houses, Burford Refinery, Pecos, Texas. Other types for pressures to 1350 pounds. And any degree superheat.



THE LARGEST LIGHT OIL WELL IN THE WORLD COMPLETELY

Kerotest Equipped

Thomas Fuzzel No. 1 Indian Territory Illuminating Oil Company, Oklahoma City. Actual 24 hour oil production 44,000 barrels and 60,000,000 cu. ft. gas.

KEROTEST Products handled this job perfectly.

Every KEROTEST Product is given a more severe test in the factory before shipment than it can normally receive in the field. This test takes the guesswork out of drilling valve, flow line valve and Christmas Tree fitting purchasing—making it possible for you to buy and specify KEROTEST with the absolute assurance that it will meet any emergency.

You too can play safe by capping your next well with KEROTEST.

Carried in Stock and Sold by
NORVELL-WILDER CO.
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KEROTEST

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PENNA.

What happens
when the dirt is thrown back?

S-W Lyne-Kote *protects pipe lines from corrosion and pays for itself through the prolonged life of the pipe*

What happens to your pipe lines when the dirt is pushed back? Do you have doubts as to how long they will remain in service—or do you *know* that they are protected from corrosion by a long-lived pipe line coating?

Lyne-Kote, the economical, anticorrosive pipe coating, is a product of Sherwin-Williams, world's largest manufacturers of protective coatings. Our vast facilities for research and precise manufacture enable us to meet the most exacting conditions with perhaps a wider margin of safety than is possible with any other manufacturer of pipe line coatings.

The following excerpt from the report of a test which a prospect of ours made on Lyne-Kote gives an accurate picture of the average comparison:

"The samples were then put back for further exposure and other chemicals were added to the soil, including Oakite. A few days ago these samples were taken out for examination. All the cold coating had been eaten off—a competitive coating had been badly pitted, almost to the bare pipe in one place—another showed slight pitting. *Lyne-Kote was in perfect condition, showing no signs of pitting or deterioration in any form.*"

Lyne-Kote is made in two consistencies:

Lyne-Kote Enamel applied hot over Lyne-Kote primer recommended for severe conditions such as rivers, swamps, etc.

Lyne-Kote cold application made in liquid consistency, suitable for application with brush just as it comes from the container, no heating being necessary.

Ask for full details on this simple method of obtaining the most pipe line protection at the lowest possible cost.

Trade-mark Registered

SEE OTHER SIDE

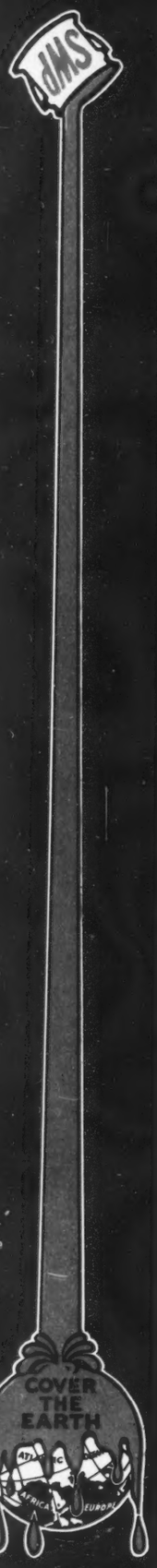
These LYNE-KOTE features mean better pipe line protection

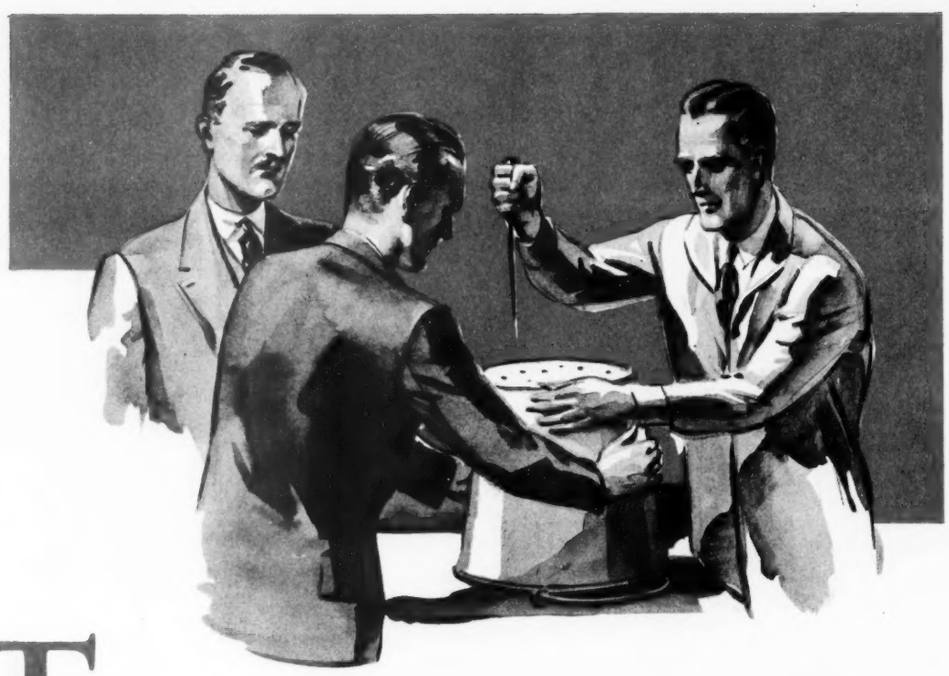
1. Impervious to air, moisture, acid, alkali and oil.
2. Insulating properties prevent electrolysis.
3. Grips surface of pipe—expands and contracts with it.
4. Does not become brittle or run off pipe at normal temperatures.
5. Withstands shocks and abrasion.
6. Applied hot, hardens in a few minutes—cold, in 8 to 10 hours.
7. No bubbles or pin holes.

SHERWIN-WILLIAMS

LYNE-KOTE

© 1930, S-W Co.





"They took a five-gallon bucket and punched it full of holes—"

This unusual test pointed the way to substantial savings on storage tank repairs and oil deterioration in tank cars

Petro-Seal is a new Sherwin-Williams product that protects the interiors of tank cars, storage tanks and tank steamers from the corrosive action of crude oils and gas. It also prevents the formation in tank cars of the acids that discolor oils.

Its effectiveness may be judged from the following experiment performed by a prominent oil company. "They took a five-gallon bucket, punched it full of holes with an ice pick and coated it inside with Petro-Seal, left this to dry overnight and then filled the bucket with crude oil. This was in July, and it is not leaking yet, after months."

By providing effective protection from interior corrosion, Petro-Seal eliminates the necessity of frequent repairs on storage tanks and prevents the deterioration of oil in tank cars. Maintenance costs are greatly reduced and leakage losses are cut down.

S-W Petro-Seal can help you solve one of the big problems in the oil and gas industry. Send for complete information and test results.

Trade-mark Registered

THE SHERWIN-WILLIAMS CO.
CLEVELAND, OHIO

MAIL THE COUPON

The Sherwin-Williams Co., 601 Canal Road, N. W., Cleveland, O.
Gentlemen: Please send full information on items checked below:

☐ S-W Lyne-Kote ☐ S-W Petro-Seal

Name.....

Address.....

.....

Company.....Title.....

SHERWIN-WILLIAMS
PETRO-SEAL

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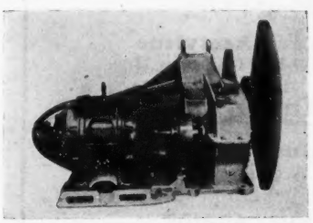
EVERYTHING ELECTRICAL FOR THE OIL FIELDS

STEADY *production*

when motors pump your wells

THE continuous whir coming from wells being pumped on the beam by electric motor drive is a satisfying and profitable sound to oil men.

It's good business to electrify pumping wells as has been realized by many oil companies.



After motor drive is installed, records from a number of fields show that more oil is pumped. This increase is due largely to the fact that lost pumping time is appreciably reduced.

Westinghouse equipment for pumping on the beam has been used in the oil fields for many years. It is reliable, economical to operate and is built to meet every requirement of the service.

SOLD BY

OIL WELL SUPPLY COMPANY

THE NATIONAL SUPPLY COMPANIES

Westinghouse

T 31044

Specify Oxwelding Under Linde Procedure Control

Pioneers in Procedure Control for Welding

LINDE OXYGEN
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UNION CARBIDE
Union Carbide Sales Company

GAS and oil pipe lines require joints that are 100% efficient—as strong as the pipe, tough, ductile, and permanently leakproof. Linde Procedure Control for welding applied to the construction of thousands of miles of Oxwelded lines has assured permanent tightness — minimum leakage losses — and lasting satisfaction in their operation.

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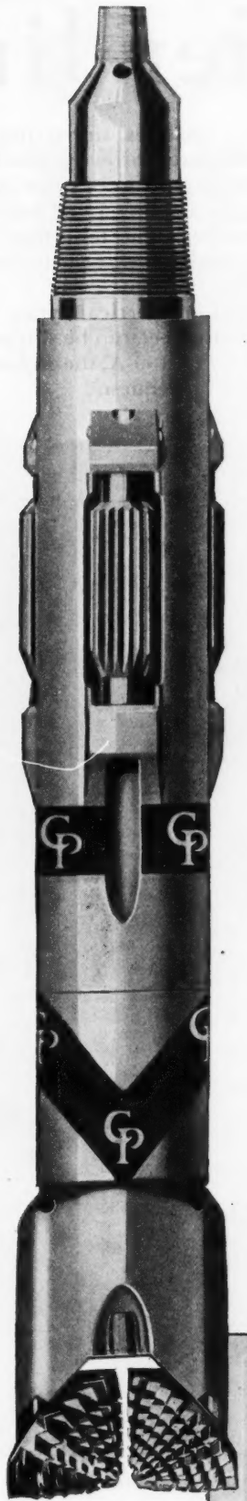
In principal cities of the country

64 Linde Plants—45 Prest-O-Lite Plants—154 Oxygen Warehouse Stocks—138 Acetylene Warehouse Stocks—38 Apparatus Warehouse Stocks—235 Carbide Warehouse Stocks



Dependable materials are the best assurance of dependable performance

CP Tucone Rock Bit with Nickel Chromium Steel reamer cutters, cones and cone bearings, manufactured by CHICAGO PNEUMATIC TOOL COMPANY, 6 East 44th St., New York, N. Y.

With Nickel Alloy Steel Parts

CP TUCONE ROCK BITS

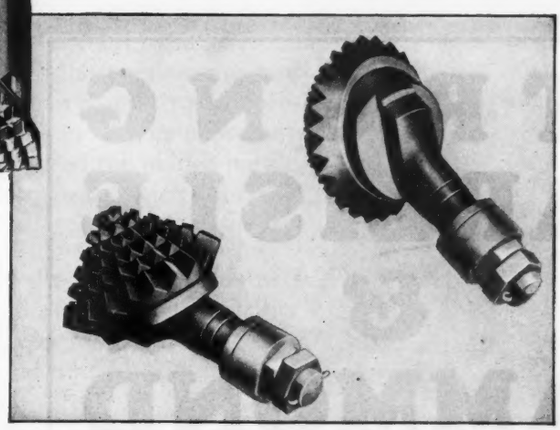
defy severest drilling conditions

PROBABLY no service to which industrial tools are subjected is more arduous than that of oil well drilling, due to the variety of rock formations encountered.

CP Tucone Rock Bits have been thoroughly tested in oil fields all over the country under the severest operating conditions, and have established an enviable reputation for low maintenance costs, speed in drilling, ease of operating and unusual dependability. These characteristics of CP bits are due both to their ingenious design and to the Nickel Chromium Steel used in their construction.

Not only in oil field equipment, but also in the manufacture of truck, tractor and airplane engines, Nickel Alloy Steels are generally accepted as superior materials for all vital parts requiring exceptional strength per unit of weight as well as resistance to wear and impact.

Detailed information regarding particular uses and applications of Nickel Alloy Steels will be furnished gladly by our staff of engineers.



Nickel
FOR ALLOY STEEL

SEND FOR "BUYERS' GUIDE TO NICKEL ALLOY STEEL PRODUCTS"

INCO NICKEL THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y. INCO NICKEL

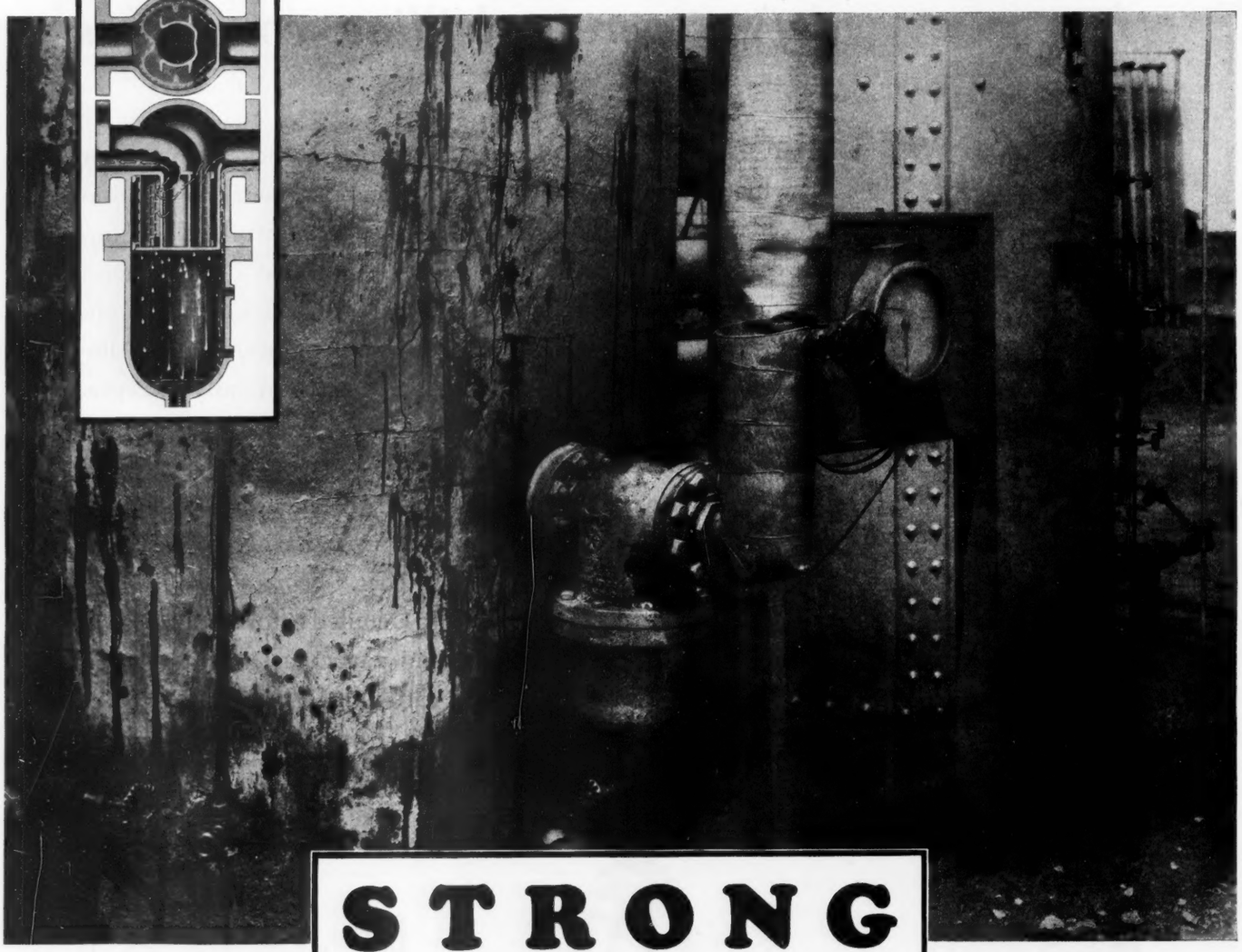
Separator on a rectifier line

DISTINGUISHED by its design as a scientific machine, the Strong separator is generally recognized among oil men as capable of highest operating efficiency under severest conditions. Strong separators remove more than 99% of the entrained liquid—oil, gasoline or water.

One of many Strong separators used by the Crosbie-Moran Gasoline Company on their properties at St. Louis, Oklahoma is shown here—the separator operating on the gas line to a rectifier.

As shown, in the Strong separator baffles force sudden direction changes, imparting a double whip-snapping motion to gases, throwing heavier particles through the cage. The slug does not come into contact with the gas current, for it is removed before it can enter the separator chamber. The full effect of the separating mechanism is used for extracting only the entrained fluid.

Strong separators, Horizontal or Vertical types, in 3″ to 10″ sizes, of semi-steel or cast steel, can be shipped promptly out of stock. *BULLETIN* 100-A, the *Refinery and Gasoline Plant Catalog,* sent on request.



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For the gasoline plant and refinery there are Strong Anti-Freeze Relief Valves, Atomizing or Blending Valves, Cushion Non-Return Valves for compressor and field lines, Gas Engine Stops,

Gasoline and Steam Separators, Mineral Seal Oil Traps, Separating Traps, Vacuum Traps, Lifting Traps, Steam Traps, and combination Vacuum-Pressure Relief Valves.

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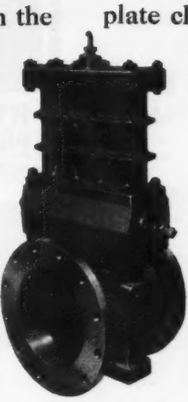

The Robinson Orifice Fitting is broadly protected by U. S. Patent No. 1569305.

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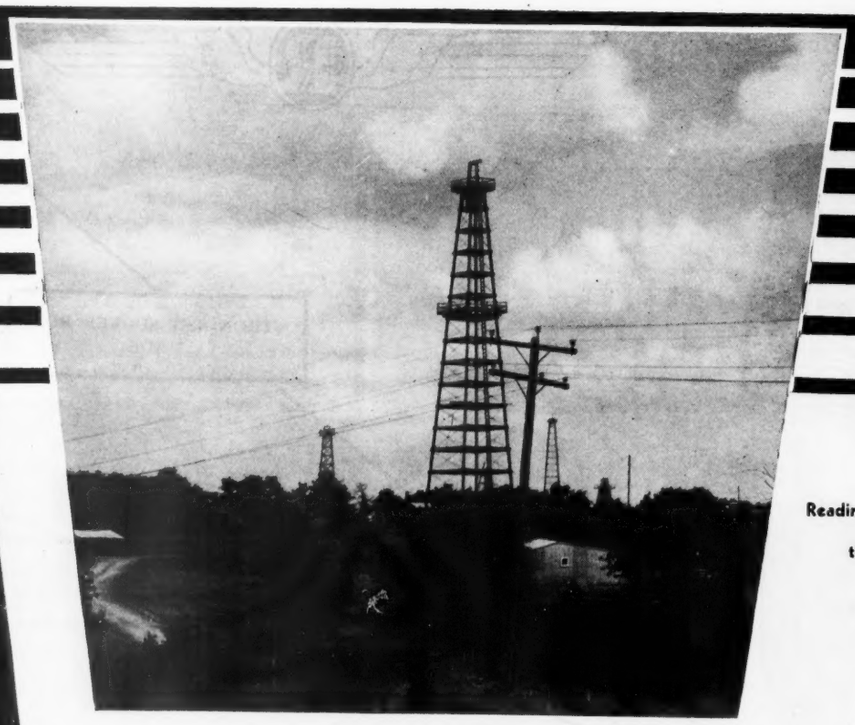
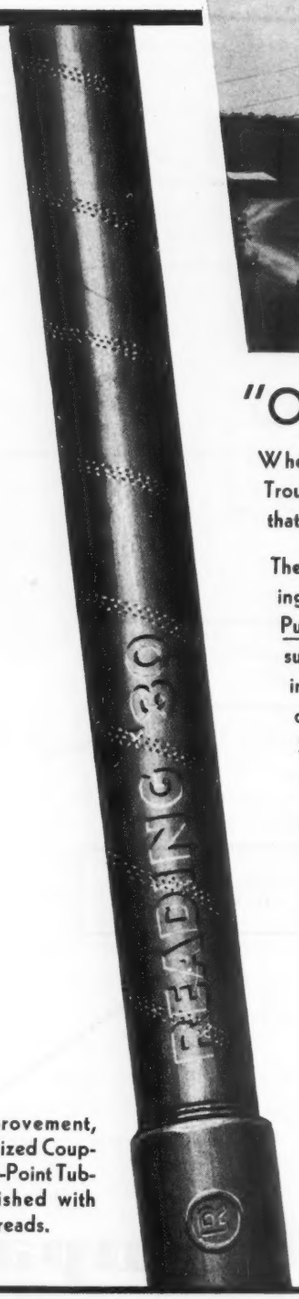


Reading 5-Point Tubing in use in the Seminole



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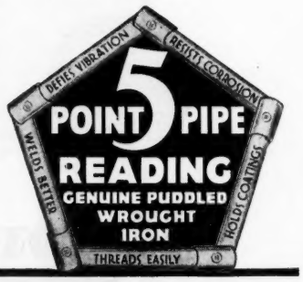

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The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

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Temporary Upswing of Production

Highest daily average estimated total production in 1929, week ended Aug. 24, 2,975,435 bbls. Lowest in 1929, Dec. 27, 2,595,320 bbls.

California Fields Opened to Obtain Potential Figures. Mid-Continent and Gulf Coast Production Declines

Highest daily average estimated light oil production in 1929, week ended Sept. 14, 2,534,524 bbls. Lowest in 1929, Apr. 13, 2,142,036 bbls.

By James McIntyre

The 57,228-barrel increase in the daily average crude oil production of the United States registered in the past week was a temporary upswing of the production indicator, brought about by the opening of flush pools in California for the purpose of obtaining new potential figures.

The test of the big California pools resulted in what many observers have been contending that Santa Fe Springs was a greatly over-rated field and that a test would show California's potential much lower than the official figures indicated. California may no longer be regarded as a 1,000,000-barrel producing division. Following the open flow period, production will be cut to low levels.

The production of the Mid-Continent and the Gulf Coastal and Southwest Texas fields declined a little and there was a slight falling off in the Rocky Mountain production. The increase was altogether in California, that State producing an average of 61,500 barrels more than in the previous week.

The recent reductions in the price of crude oil make curtailment of production all the more imperative. The fact that most of the purchasers of high grade sweet oil from the Mid-Continent were averse to cutting the price indicates that they will be badly in need of that class of crude oil by the end of winter. Continued curtailment will keep surplus oil off the market and hasten the time when better prices will be necessary if crude requirements are to be filled for spring and summer refining needs.

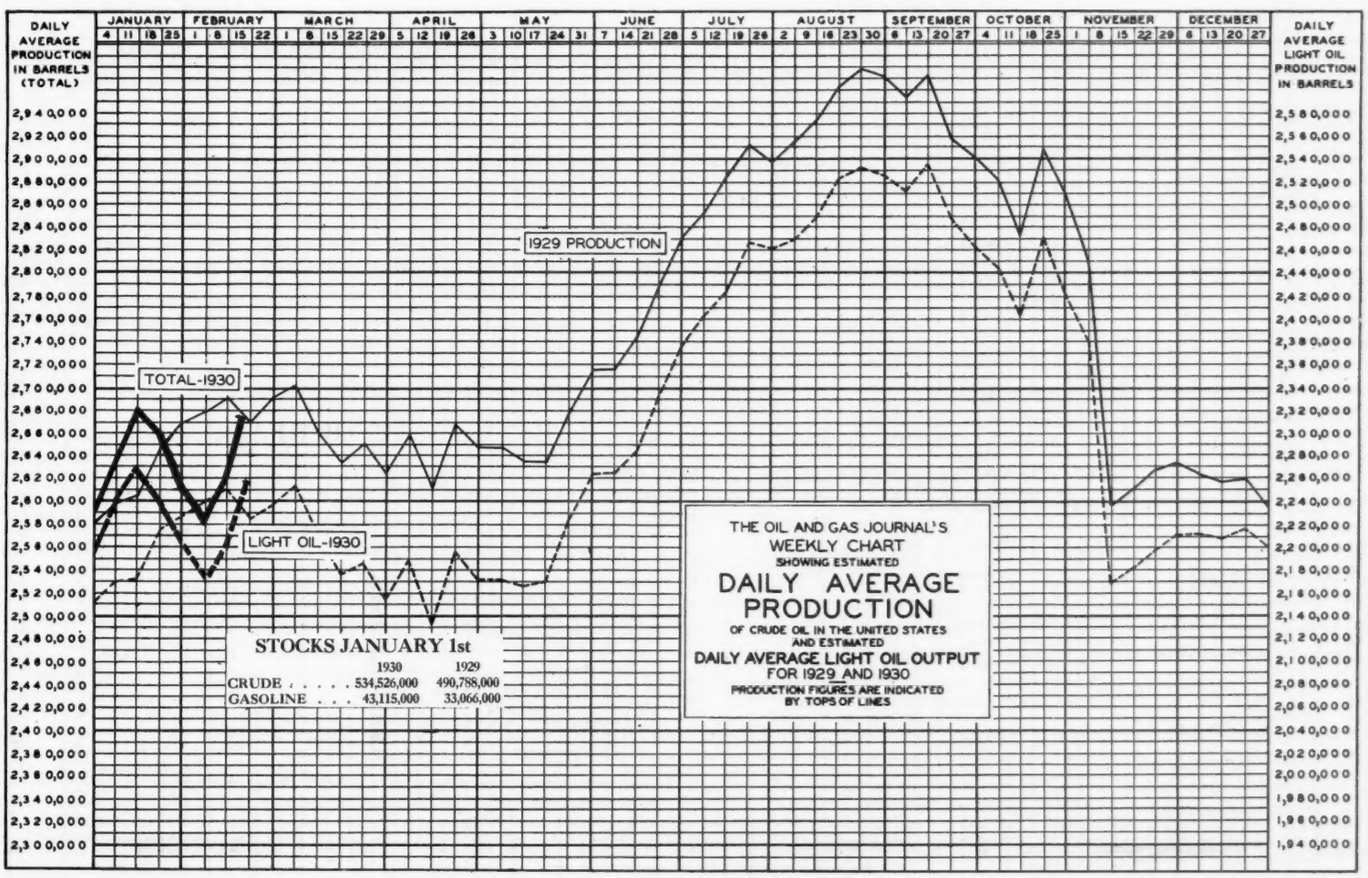
The new scale of prices in Oklahoma and Kansas has wiped out all profits on many oil properties. It is said that even some Seminole leases will be operated at a loss at the new prices paid for the grade of crude produced in that area. It is a time for the stiffening of the conservation movement all along the line. The oil that is kept under ground for the remainder of the calendar winter season has a chance for better prices in the spring. To overproduce now would be to figuratively pull the house down. It is believed that oil men recognize this fact and that there will be no serious obstacles put in the way of a continuance of the existing conservative production policy.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended February 15 and a comparison with the previous week follows:

	Feb. 15		Feb. 8	
	Light	Heavy	Light	Heavy
Oklahoma—				
Oklahoma City	86,730	.....	69,675	.....
St. Louis-Pearson	43,355	.....	42,100	.....
Seminole	215,055	.....	229,745	.....
Northern Miscellaneous	230,530	.....	231,740	.....
Southern Fields	56,200	.....	57,725	.....
Total Oklahoma	631,870	.....	630,985	.....
West Texas—				
Hendricks	88,840	.....	88,250	.....
Yates	138,285	.....	141,440	.....
Remainder	112,085	.....	112,850	.....
Total West Texas	339,210	.....	342,540	.....
North Louisiana	32,400	5,150	32,440	5,150
Arkansas	17,083	41,315	17,620	41,080
Texas Panhandle	89,265	.....	91,601	.....
North Central Texas	135,102	.....	134,543	.....
East Central Texas	25,163	.....	22,810	.....
Kansas	110,235	.....	110,215	.....
Total Mid-Continent Area	1,380,328	46,465	1,382,754	46,230
Gulf Coast	.....	201,372	.....	203,416
Southwest Texas	.....	65,922	.....	66,652
Eastern	140,000	.....	139,000	.....
Rocky Mountain Area	74,402	.....	74,709	.....
California—				
Santa Fe Springs	188,000	.....	163,000	.....
Long Beach	116,000	.....	110,000	.....
Huntington Beach	41,500	.....	41,500	.....
Elwood	60,000	.....	36,500	.....
Ventura Avenue	55,000	.....	51,000	.....
Seal Beach	32,000	.....	29,500	.....
Remainder of State	170,000	105,000	170,000	104,500
Total California	662,500	105,000	601,500	104,500
Total United States	2,257,230	418,759	2,197,963	420,798
Grand Total	2,675,989		2,618,761	

→ **Total Increase, 57,228 Bbls.; Light Oil Increase, 59,267 Bbls.** ←



Cut Discounted in Refinery Markets

Check Fails to Reveal Any Weak Spots Brought About by the Reduction in Crude Price and Retail Gasoline

By C. O. Willson

It appeared on Tuesday that the combination of a reduction in crude oil prices in Mid-Continent fields and a general lowering of tank wagon and service station prices in middle western states last week had been discounted in the refinery market of Oklahoma before they actually became effective. A careful check of prices, particularly gasoline, the first two days of the week failed to reveal any weak spots brought about by the lowering of raw material costs and the drop in the gasoline retail markets.

Fuel oil prices are irregularly lower than they were a week ago and natural gasoline prices are generally stronger but neither change had any direct relationship to the crude oil price changes. The kerosene market also appeared to be slightly stronger.

The developments in the refined markets are in line with those which have materialized in previous years under similar conditions. Mid-Continent crude price and gasoline service station prices in the consuming territories have often been reduced at the same time during the past ten years and invariably they had been preceded with a gradual slump in the refinery gasoline market reflecting a general weakness in oil markets. It has been the rule in the past as in the present situation that by the time the crude oil and retail prices were lowered those responsible for the refinery market had begun to get their house in order so that no further reductions in the gasoline tank car market materialized.

The so-called spot tank car market on gasoline in Oklahoma and other Mid-Continent refining groups is probably the most sensitive price barometer of the oil business reflecting weakness or strength. This tank car market started to decline last June shortly after crude oil and tank wagon prices had been advanced to the levels from which they have now been reduced. Despite efforts made to bolster the tank car market it continued a downward trend, a weakness brought about by excess crude oil and gasoline which proration agreements were not entirely successful in eliminating.

Two weeks ago the tank car prices apparently reached bottom and recently there had been evidence of a price recovery. It now appears that the future will see a continuance of this trend although no rapid recovery is wanted or expected.

Reasons for Improvement

Although this firmness in the refinery tank car market in the face of other reductions vital to the profitable operation of the average refinery organization appears incongruous to the outsider, it is based on fundamental reactions in the oil industry which seldom has its crude oil, refinery and retail markets in equilibrium over any great length of time.

In regard to the refinery market the past few months have seen the liquidation of a large quantity of gasoline. Refiners generally now have their program outlined for the next few months and in most cases are in a position to store excess supplies rather than force large quantities on the market at lower prices. On the consumption side the jobber demand is improving. It is characteristic of the jobber that while he senses a weak situation in the oil industry and contributes to it by staying out of the market as much as possible he generally waits until all the unfavorable price factors have been discounted before he starts buying.

In the present situation the jobber had anticipated the lower crude oil and retail prices and had reduced his purchases to a minimum. With the reductions announced he starts buying and thus ends the inactivity which was partially responsible for the lower prices.

In brief, most buyers and sellers now take the position that practically everything of an unfavorable nature has materialized and this mental attitude in the past has usually led to more optimistic outlook which brings a gradual recovery to the industry's markets. Because it is the most important factor in profits interest naturally centers in the gasoline market. There are still some possible bearish developments such as a lowering of export prices at coastal points but on the whole the trade is inclined to take the position that the worst is over, the

(Continued on Page 158)

REFINED MARKET BAROMETER

A general lowering of crude oil prices except California and additional reductions in gasoline tank wagon and service station prices during the past week have served to disturb the refinery market. However, there have been no actual reductions of major importance in refinery prices indicating that the lowering of crude oil and gasoline wholesale and retail prices had already been largely discounted. The gasoline market is unsettled along the East Coast and prices have been reduced at some points. Prices at other refining centers were holding fairly steady. Improvement is noted in the kerosene market at several points. Some grades of fuel oil are slightly weaker in the Southwest with a steady demand for the better grades of gas oil. Natural gasolines are firm both in California and the Mid-Continent. Steam refined cylinder stocks and bright stocks are both unsettled and it is believed that the new crude oil prices will be reflected in the lowering of quotations. Wax continues generally sluggish.

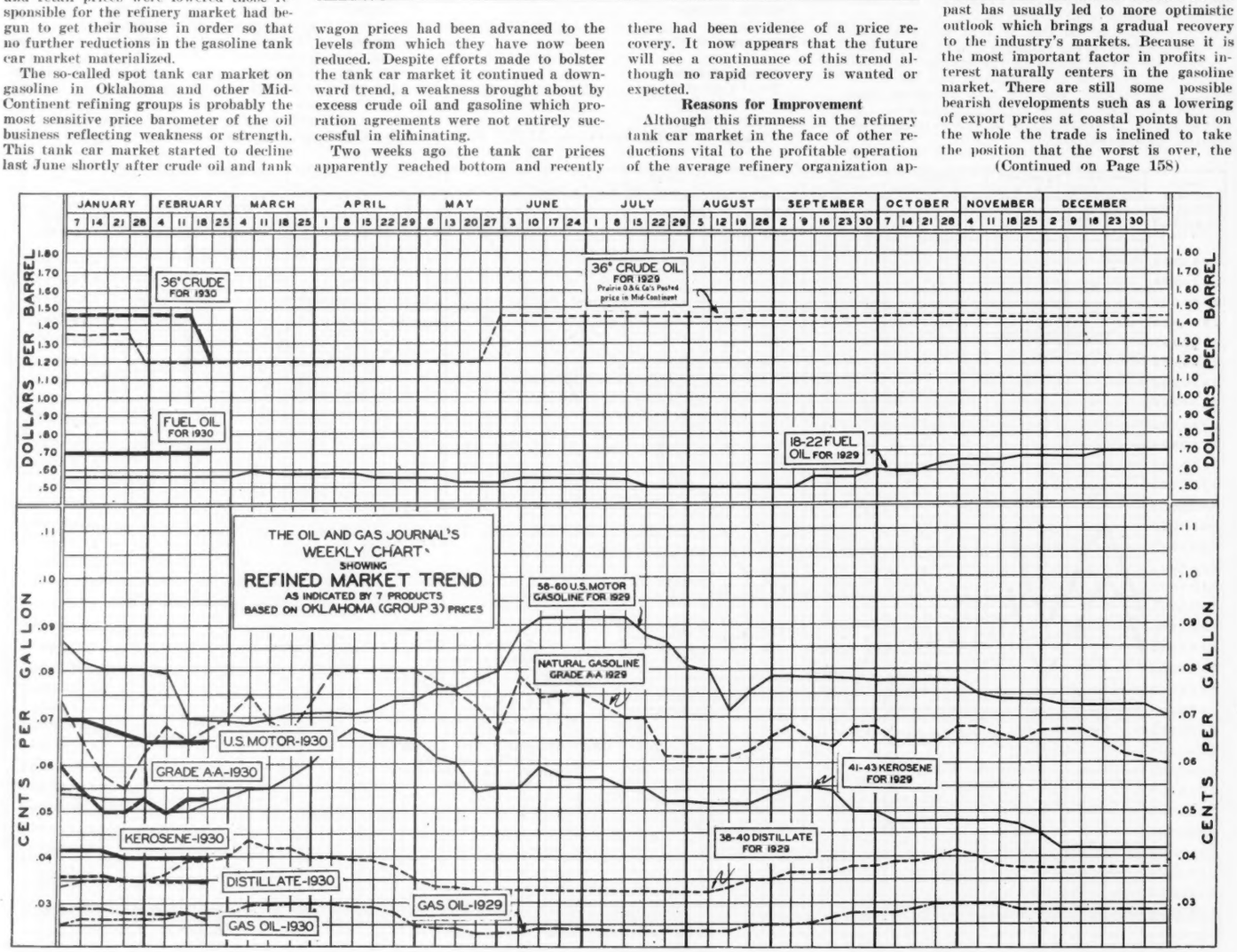
Mid-Continent—Little change in refinery gasoline prices despite lower crude oil and retail prices. Natural gasoline strong. High gravity grades of fuel oil sluggish. Better grades of gas oil unchanged with concessions available from a few sources in industrial grades. Better tone to kerosene market. Lubricants and wax slow.

East Coast—Easiness in gasoline market following additional tank wagon reductions. Good movement of kerosene. Steady demand for furnace oil. Fuel oil prices well maintained. Some price cutting in gas oil. Little trading in lubricants and wax. Gasoline export demand dull.

Pennsylvania—Lowering of crude oil prices yet to be reflected in refined market. Believed that some grades of steam refined stocks and bright stocks will be lowered. Kerosene and gasoline unchanged in price.

Gulf Coast—No important changes in neutral oil prices with fair demand. Fuel oil sluggish. No change in gasoline.

Chicago—Crude price and tank wagon reductions upset market. Gasoline prices holding fairly well. Furnace oil demand slow. Fair inquiry for industrial fuel oils and high gravities slow. Better demand and higher prices for kerosene.



Santa Fe Springs Greatly Overrated

Flow Test Shows California Reached Maximum, Outside Kettleman Hills, Several Weeks Ago. Situation Nearing Climax

By L. P. Stockman

LOS ANGELES, Calif., Feb. 18.—Preliminary figures covering results of the first four days of the six-day flow test being conducted in flush fields to determine actual potential production conclusively indicates that California reached its maximum potential daily production several weeks ago when it could have produced 1,058,000 bbls. daily with everything wide open. It must be remembered, however, that this figure does not reflect the curtailment work at Kettleman Hills, where 20 wells are either shut in or standing cemented on top of the pay in conformity with the Kettleman Hills agreement, which contemplates a restriction in production and development work until July 1, 1931. These 20 wells would easily make 50,000 bbls. a day if turned loose.

California's potential production at the present time approximates 975,000 bbls. daily and this will show a further drop during the next several weeks as Santa Fe Springs slid out from under its rated potential. According to Umpire Grimm's theoretical potential, this field should have done better than 350,000 bbls. daily when opened up, but production did not even come within striking distance of this figure on an actual flow test. A few weeks ago Santa Fe Springs might have reached the 300,000-bbl. mark, but an abnormal decline set in so fast that the bottom has literally fallen out. No data are being released as to the results of the flow test now being conducted, but a check indicates that Santa Fe Springs is well below 250,000 bbls. per day. During the second day it produced 215,000 bbls. and on this basis it is not likely that field production on the final day of the six-day flow test will exceed 225,000 bbls. Production during the last 24 hours of the test will be accepted as the actual potential upon which to predicate the proposed curtailment in conformity with the movement to reduce state production to a maximum of not to exceed 609,000 bbls. daily.

Greatly Overrated

Reports indicate that the actual potential at Long Beach will be around 140,000 bbls. daily. These figures indicate that both Santa Fe Springs and Long Beach have been greatly overrated. The Elwood Field, on the other hand, greatly exceeded its rated potential of 54,500 bbls., as it consistently produced better than 65,000 bbls. a day and was going stronger on the last day of the flow than at any other time.

Preliminary figures of the test being conducted at Ventura Avenue indicate that this field will probably also exceed its rated potential, as evidence indicates that it would do around 75,000 bbls. per day if opened up.

The results of the flow test now being conducted at Santa Fe Springs should prove exceptionally interesting if detailed figures are released, as it will show just who has been doing the curtailing. These figures when released will show that the Union Oil Co. stands at the head of the list, as its production was more than doubled when restrictions were lifted in order to make the prescribed six-day flow test. The Union has pinched its production down to 19,000 bbls. per day in conformity with the curtailment agreement covering Santa Fe Springs. Upon resuming production the company's output increased to 45,000 bbls. daily, indicating that it has really maintained more than its obligations during the entire period of curtailment.

The General Petroleum, Standard, Shell and The Texas Company are also expected to show a favorable condition when final figures are released. Several smaller operators will probably also be in the relatively small group whose actual production on the six-day flow test will be in excess of their production previous to the temporary lifting of restrictions.

Decision in 10 Days

The outcome of the movement under way to reduce state production to 609,000 bbls. daily should be determined within the next 10 days. If operators refuse to accept a reduction based on the last day's flow of the six-day test now nearing completion it will be just too bad. The situation has reached the stage right now that it will be either a restriction in production or a drastic cut in the posted price for crude and refined oils. The decision rests with each individual operator whether it will be the law of supply and demand or stabilization through regulation of production.

California's latest attempt to bring production and consumption into more nearly an equilibrium will be watched with considerable interest because the stability of the oil industry depends almost entirely on the outcome of conservation work now under way. If producers succeed in reducing daily production to 609,000 bbls. and refiners strictly adhere to their mutual agreement to operate on a current basis, the crisis confronting the California oil industry will be passed. To reach the objective of 609,000 bbls. per day, operators will be obliged to shut in or restrict production approximately another 100,000 bbls. The amount of production to be restricted in each field will not be known until after conclusion of the flow tests now being conducted in several flush and semiflush fields.

General Committees Named

Two general committees have been formed to carry out the proposed curtailment program which, incidentally, will be state-wide in scope. The general committee consists of A. H. Bell, Continental Oil Co.; W. H. Berg, Standard Oil Co.; J. A. Bermingham, The Texas Company; P. N. Boggs, Union Oil Co.; J. B. Brown, General Petroleum; W. E. Dunlap, Richfield Oil Co.; J. H. Jenkins, Associated Oil Co.; A. T. Jergins of the A. T. Jergins Syndicate; H. R. Macmillan of the H. R. Macmillan Oil Co.; W. C. McDuffie, Pacific Western Oil Co.; S. B. Mosher, Signal Oil & Gas Co.; R. A. Sperry, General Petroleum, and J. U. Star, Shell Oil Corp. This general committee, selected at an informal meeting of operators last week, subsequently appointed a subcommittee which is designated as the Fact Finding Committee. The Fact Finding Committee consists of W. E. Dunlap, Richfield Oil Co.; B. J. Parsons, General Petroleum; J. H. Menke, Standard Oil Co.; T. E. Swigart, Shell Oil Corp.; Emile Kluth, George F. Getty Co.; A. C. Rubel, Union Oil Co.; Joseph Jensen, Associated Oil Co.; R. R. Templeton, Pacific Western; R. McCollom, Signal Oil & Gas Co.; A. T. Jergins of the A. T. Jergins Syndicate; E. T. Stanley, Macmillan Oil Co.; E. C. Chandler, Dabney-Johnston Oil Co.; Don Weaver, The Texas Company; A. H. Bell, Continental Oil Co.; F. W. Fortine, Barnsdall Oil Co., and Edwin Higgins, California Oil & Gas Association. It will be charged with the duty of assembling all facts of interest pertaining to operators so far as curtailment is concerned and preserve this data for the inspection of any operator in the State. This committee will also act in an advisory capacity to the general committee, to various field committees through their chairman, and also to the umpires.

Into Two Groups

To equalize the burden of curtailment the various fields throughout the State have been segregated into two groups. Group No. 1 includes Santa Fe Springs, Long Beach, Ventura Avenue, Elwood, Seal Beach, Kern Front, Mount Poso, Round Mountain and the Maricopa Flats section of the Midway-Sunset Field. Group No. 2 takes care of all other fields. The advisability of segregating fields into these two groups is quite obvious from this set-up as it will be noted that Group No. 1 contains all the flush or semiflush fields which will be obliged to bear most of the burden. Group No. 1 has an estimated potential daily production of 674,595 bbls. and a present production of 425,500 bbls. per day. The curtailment in fields within this group aggregates 249,095 bbls. per day. This represents a curtailment of 36.93 per cent but it must be remembered that this is based on theoretical potentials generally admitted to be too high. Group No. 2 has a potential daily production of 384,295 bbls. and a daily production of 279,185 bbls. A total of 105,110 bbls. per day has been shut in by operators in these fields. This represents a cut of 27.35 per cent. San Joaquin Valley fields are credited with a current daily production of 159,750 bbls. and a potential production with everything wide open of 253,600 bbls. per day. The curtailment in this area is 93,850 bbls. per day, or 37.01 per cent of the potential. Coastal fields were producing 94,155 bbls. daily when the preliminary survey was completed and have an additional 46,460 bbls. per day shut in. Southern California fields were producing 450,780 bbls. daily with an estimated curtailment of 213,895 bbls. per day shut in or curtailed.

As soon as all flow tests have been completed in fields comprising Group No. 1, which will be not later than February 19, the Fact Finding Committee, which is composed of 15 technical executives, 7 from major companies and 8 from independent operating companies, will immediately establish the percentage of curtailment to be applied to each field involved. This committee is now studying all fields in Group No. 2 to determine as rapidly as possible the extent of percentage cut that can be applied against these fields, taking into consideration present curtailment of both production and drilling operations which have prevailed in those fields for various periods. During the course of discussions among operators regarding the advisability of conducting flow tests to ascertain the actual potential of wells in flush fields, several operators expressed a reluctance to pursue this policy. This objection was finally overcome on the advice of competent engineers that a resumption of production would not jeopardize the status of any well if care was exercised and operators did not attempt to drain the entire field during their individual flow tests.

Basis for Curtailment

The basis for present curtailment in California is predicated on the following facts brought out by the general committee at one time or another during the course of discussions. The potential production of crude oil in California greatly exceeds the market demand. Actual production has been running around 700,000

(Continued on Page 157)

PETROLEUM SECTION, A.I.M.E., DISCUSSES UNIT OPERATION

By A. E. Mockler

New York Bureau, The Oil and Gas Journal

NEW YORK, Feb. 18.—The Petroleum Division of the American Institute of Mining and Metallurgical Engineers held its first general session here today with a capacity attendance of oil field engineers and other petroleum interests. The session was given over to a general discussion of unit operation of oil pools which developed many interesting features.

H. H. Hill and E. L. Estabrook presented an interesting outline of the progress made through unit operation in eastern pools in this country and outlined the success which the unit movement has attained in a number of foreign fields as well. Unit operation in California was outlined by Joseph Jensen, his talk being followed with close attention owing to the progress which has been made in curtailing output on the Pacific Coast through co-operative action. Progress made in the unitization of field operations in the Mid-Continent was outlined by A. W. Ambrose and C. E. Beecher, who spoke on unit operation in Oklahoma and Kansas. Fred W. Wood talked on unit operation in the Rocky Mountain fields where this type of field development has made considerable progress, and Frederick H. Lahee spoke on unit operation in Texas, Louisiana, Arkansas and New Mexico.

Recent developments in the petroleum situation as reflected by the price cuts in many domestic fields and the threat of further reductions in the event that crude production is not balanced more evenly with the consumptive requirements of the country has brought the question of unit operation strongly to the forefront, speakers emphasized, and it appeared to be generally felt among the oil men here for the meeting that the unitization program will receive considerable impetus as a result of the unsettled conditions now generally prevalent in the crude oil branch of the industry.

Informal discussion among petroleum engineers at the meeting indicates that support of the unit method of field development will be far more general among oil companies in the United States during 1930 than has been the case in previous years:

Symposium on Production

Tomorrow's session will be featured by a symposium on 1929 production, the year's developments in the principal United States fields to be reviewed by competent authorities. In addition to the discussion of domestic field developments timely reports on 1929 output for practically every producing area in the world will be presented.

The business sessions of the Petroleum Division will terminate on Thursday with the morning and afternoon sessions of that day to be given over to engineering research and economics. Among the topics to be discussed are valuation of flood oil properties, recent developments in flooding practice in the Bradford and Richburg Fields, the spacing of gas wells, with a general discussion on engineering education based on mimeographed data. Joseph Chalmers of the United States

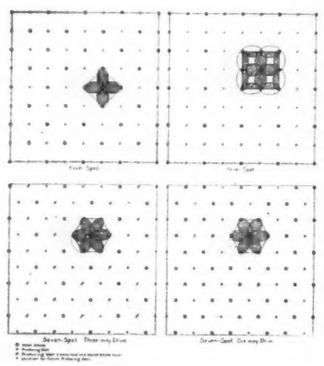
(Continued on Page 157)

Recent Developments in Flooding

Latest Practice in the Bradford and Richburg Oil Fields. Data on Five Spot and Other Intensive Floods

By C. R. Fettke
Professor of Geology and Mineralogy, Carnegie Institute of Technology, Pittsburgh, Pa.*

The Bradford Pool of northwestern Pennsylvania and adjacent portions of New York State and the Richburg of southwestern New York State are still outstanding as the only pools where artificially conducted water drives on an extensive scale have proved economically successful. In the Bradford Pool practically all of the production comes from one sand, the Bradford, while in the Richburg the major portion comes from the Richburg sand. That both sands were deposited under marine conditions is indicated by the marine fossils that are sparingly distributed throughout them.



Various types of intensive flood patterns.

While they may not occur at precisely the same geological horizon, they are both in the lowermost portion of the Chemung formation of Upper Devonian age.

Since the summer of 1928 it has become the practice of many operators in both pools to take some cores of the sand in order that detailed information in regard to the characteristics of the sand underneath a particular property may be available for planning new development work. The general characteristics of these two sands over much of the area included in the two pools, therefore, are now fairly well known.

In thin sections, under the microscope, typical Bradford and Richburg sandstones look much alike. Both are made up principally of an interlocking mosaic of fine quartz grains, the majority of which are pronouncedly angular. A few flakes of muscovite and biotite are present and an occasional plagioclase grain. Some of the mica flakes have been bent around the quartz grains. A small amount of interstitial material, consisting of an aggregate of sericite, clay minerals, and a brown mineral, probably limonite, occurs between the quartz grains, but is not uniformly distributed. Silica, as a secondary crystalline outgrowth from the original quartz grains, and the small amounts of clay material form the bond. Calcite is rarely present in large enough amounts to constitute an important bonding agent. In most instances only one or two grains can be seen in a thin section. Occasional small clusters of minute pyrite crystals, clearly of secondary origin, are present. In thin sections cut perpendicular to the bedding, stratification is frequently faintly indicated by the alignment of the occasional mica flakes and some of the elongated quartz grains parallel to the bedding planes. In size as well as shape of the grains, the Bradford and Richburg sands are similar.

Five-Spot and Other Intensive Floods

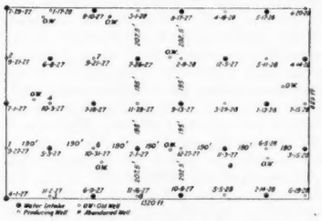
One of the great advantages of the five-spot method is that it permits a much more rapid return of the capital invested in the exploitation of a particular tract than does the "circle" or "line" flood. In view of the high cost of acreage in the Bradford and Richburg Pools and the expense involved in drilling the great number of closely spaced wells required for water-flooding operations, this is an important factor. While the method calls for a larger immediate investment, the total investment is smaller. Drilling all the wells on a particular tract at one time results in an appreciable saving in the cost per well. The installation of powers, rod lines, pipe lines, etc., is also considerably simplified. This work has to be done but once for the whole tract, while in the case of the old-style methods it frequently became necessary to make changes as the flood advanced. Also, in the case of the "circle" and "line" floods, with the exception of the original intake wells, all the wells subsequently drilled had to be tubed first to pump oil and later to take water, which meant an additional expense. There is also a large saving in operating costs, in that a property will be depleted in a much shorter length of time.

The adoption of the five-spot method has taken place so recently that no property on which it is now in use has as yet reached the economic limit of production. Several, however, are sufficiently advanced so that fairly accurate estimates as to total recovery can be made. The results shown by all that have come to the writer's attention indicate that the total yield per acre will be at least as great as has been obtained on adjacent or nearby tracts by the old methods, and in some instances considerably greater.

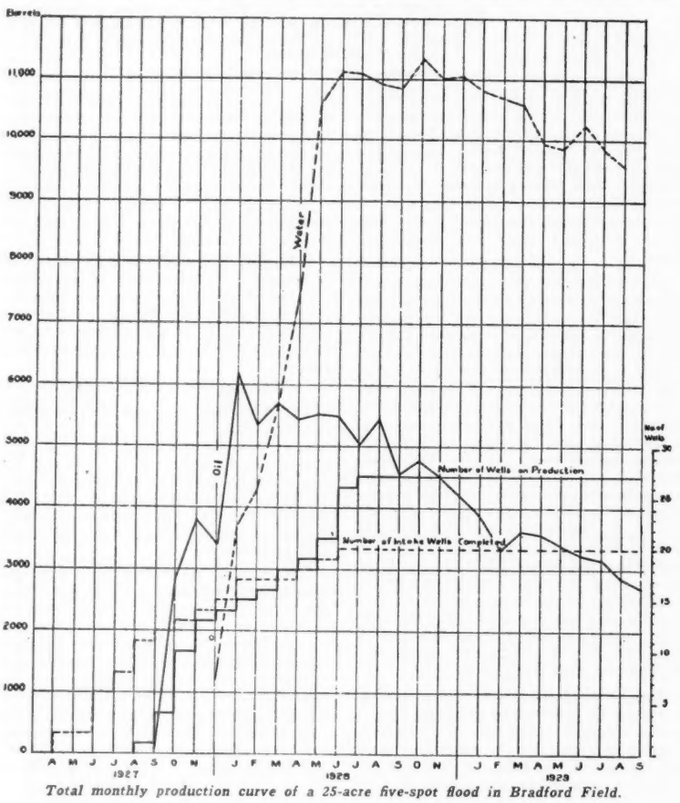
In practically all new development work arrangements are made to introduce the water at the top of the well and, in most instances, the wells are tubed in such a manner that pressure in addition to that of the hydrostatic head of the column in the well can be maintained. This has made it possible, by means of meters, to determine just how much water is entering the sand through each well. Formerly almost no data of this type were available and little was known in regard to the behavior of the intake wells. Each intake is now assured of an adequate supply of water. Where properties are located along the crests of sharp divides, it is now definitely known that, in many instances, there is not an adequate supply of subsurface water during the dry months. Such properties, therefore, are now showing much better results where the five-spot method combined with pressure flooding has been introduced. Pressure flooding has also made it possible to flood areas of somewhat tighter sand, which did not respond satisfactorily to former methods.

Herold has shown that according to theoretical principles, in a body of uniform sand the area depleted between a water intake and producing well has the shape of an ellipse with the two wells located at the foci. The size of this ellipse will depend upon the pressure applied. Pressure flooding, therefore, affords a means of decreasing the areas of trapped oil. Also, by the use of increased pressure, the distance between intake and pumping wells can be increased without necessarily sacrificing any more oil in trapped areas. This practice is actually being followed at the present, as most operators who have recently installed pressure floods have increased the distance between wells over that of the original five-spot floods that depended upon subsurface water without additional pressure for their supply. The smaller number of wells required has to a certain extent offset the additional cost of installing pressure plants and laying high-pressure water lines, which, in the Bradford district, have to be buried to a depth of at least 3 feet to protect them against freezing during the winter months.

One of the most difficult conditions to contend with, which is encountered in parts of both the Bradford and Richburg Pools, is the occurrence of alternate layers of sand that vary greatly from one another in porosity and hence in permeability. One of the means of at least partly overcoming this condition in connection with pressure flooding is to delay the drilling of the oil wells until after the water under pressure has had an opportunity to enter the sand for a period of four to six months, or even longer, the length of time depending on conditions shown by core studies of the sand. At first the water tends to enter the more permeable layers rapidly, crowding the little globules of oil and bubbles of gas ahead of it as the volume of the latter shrinks. As the pressure builds up, part of the gas also goes into solution in the oil. Finally, since there is no outlet until the oil well is completed, such a pressure is built up ahead of the advancing flood of water that no further movement is possible. In the meantime, water also enters the less permeable layers, but at a slower rate, and by delaying the drilling of the oil wells a considerable advance in these layers also takes place; but of course, on account of the smaller size of the openings, equilibrium is established and conditions become static with the front of the flood at a shorter distance from the intake well. When the oil well is finally drilled, there has already been built up a bank of oil under pressure ahead of the water, which commences to move toward the well.



Five-spot flood pattern of 25-acre tract in Bradford Field.



Total monthly production curve of a 25-acre five-spot flood in Bradford Field.

If the oil well is completed and put on production at the same time that the water under pressure is applied at the intake well, the water travels through the more permeable layers comparatively rapidly, and once it reaches the oil well, with the resistance due to the Jamin effect of the alternating oil globules and gas bubbles overcome, the velocity becomes dependent on the pressure applied, as the flow of water through the sand thereafter probably closely follows the law of the flow of water through capillary tubes; that is, the velocity and hence the volume varies directly as the difference in pressure at the face of the sand in the intake and producing wells.

Pressure

If the pressure at the face of the sand in the intake well is kept constant by supplying all the water that it will take at that pressure, the water will eventually pass through the less permeable layers also, provided the pressure is great enough to cause a movement from the intake to the producing well through such layers. However, enormous quanti-

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*Before A.I.M.E., New York, February, 1930. Copyright, A.I.M.E. Published by permission of the State geologist of Pennsylvania.

Unit Operation in California Fields

Conservation of Gas Even More Difficult than Conservation of Oil. Kettleman Hills Offers Critical Test

By Joseph Jensen
Chief Petroleum Engineer, Associated Oil Co., Los Angeles, Calif.*

There is one marked difference in the California oil fields as contrasted with the usual conception of oil fields elsewhere. This difference may be expressed in one of two ways: Either there was insufficient gas to make an accumulation of gas on top of the structure free from oil, or accumulation of oil on the crest of the structure was sufficiently great to furnish oil to hold most of the gas in solution. While it must be true that the gas-oil ratio on the very crest of the structure is different from that down the dip, this difference is not always pronounced. A much greater difference occurs in wells based upon the length of time in which they have been producing. The effect of the age of a well upon the gas-oil ratio is much more pronounced than is the effect of structural location. Such a condition limits the extent to which unit operation might help in the development of a field by eliminating drilling on top of the structure. On the other hand, control of the producing wells, after the gas-oil ratio becomes too high, is of even more importance in the life of a slowly drilled field. Without such a control, oil recovery will be decreased, due to gas wastage. Owing, however, to the absence of an accumulation of gas on the crest of the structure, the principal advantage of near unit operation in these fields developed in the past has been that due to limiting or regulating drilling. This has expressed itself in a satisfactory well spacing program and a control of the rate of drilling in many near unit California fields.

Outstanding among these near unit fields is Dominguez Hill where lease requirements in some instances and line agreements in others resulted in spacing the wells 610 feet apart, or one well to 8.54 acres. At North Belridge where the oil is heavy, the Belridge Oil Co. and the Reward Oil Co. made a 500-foot line agreement. The Belridge Oil Co. spaced its wells 1,500 feet apart. As a result of this, its wells are still flowing. Surplus gas in the North Belridge Field is taken to the South Belridge Field by this company where it is put back into the ground.

At North Belridge a deep sand, comparable with the Kettleman Hills formation, has been cored and is soon to be tested. Fortunately, the well controlled land situation will not precipitate an intensive drilling campaign.

Limitation of Penetration

Another practice adopted in some of these near unit fields has been the limitation of penetration of the oil zone. In 1924 the Shell, Union and Associated agreed to limit their penetration of the oil zone in the Dominguez Field to a thickness of 400 feet. The field was drilled up on this program. Subsequently one of the companies has drilled several wells beneath this 400-foot zone, but the other companies have thus far limited their drilling to one well for each company.

In the Inglewood Field in 1925 when the production of this field had reached 116,000 bbls. per day, the practice was instituted of limiting penetration to a zone 1,300 feet thick, even though one of the companies had proven a lighter oil and a very valuable zone lying beneath this 1,300-foot zone. Subsequently, this deeper zone was proven to be 400 feet thick by a second well which was shut in in 1926. This practice has resulted in setting up valuable reserves at greater depth in these near unit fields.

In the main Seal Beach Field, the Continental, Standard and Associated followed the practice of developing the underlying zone only after the near depletion of overlying zones by using three stages of development. This not only eliminated a high peak production but it permitted using some holes for two deepening purposes. By this method two extra sets of wells were unnecessary.

A similar situation exists in the East Coyote Field on the Hualde Dome where only the Hualde and Anaheim zones have been developed. At West Coyote a recent deep test has proven a deeper zone. Since lease requirements have been filled, the zone can remain proven but undeveloped. At Montebello the same situation of proven reserves in deeper sands also exists.

Shields Canyon and Oakridge or South Mountain, both fields in Ventura County, were developed by Ventura Consolidated. These properties were merged with the California Petroleum and then with The Texas Company, becoming Texas Company properties. The development of these two structures occurred through the period of higher oil prices preceding 1922 and furnished a sustained and substantial revenue for several years. Now the fields are being repressured by The Texas Company to conserve gas produced with the oil.

When the Santa Maria Field was originally developed there was competitive drilling, but since that time the Union Oil Co. has taken over many properties, thus permitting the shutting in of much of this field.

Storing of Gas

The Union Oil Co.'s control of the Lompoc Field has made it possible to store gas from the Elwood Field in the Lompoc Field.

This storing of gas already represents a widespread movement which is coming into its own. It has been demonstrated as feasible at Montebello, West Coyote and Brea-Olinda. In some instances there has already been a marked improvement in possible oil recovery. Long Beach gas in large quantities has been stored by the Shell company in the Dominguez Field. Ventura gas is being stored in the dry gas sand of the Buena Vista Hills of the Sunset-Midway Field.

No better example of controlled drilling exists in the State than in the Ventura Avenue Field. As they originally existed, the Ventura and the Long Beach Fields seemed comparable in every way as to oil content and thickness of oil zone. To the end of 1929 their development had been as follows:

Year	Producing wells	Total production
Long Beach		
1921	6	75,588
1922	156	18,560,595
1923	329	68,810,361
1924	525	60,119,659
1925	620	40,116,633
1926	711	37,931,964
1927	636	34,541,665
1928	844	62,467,105
1929	990	60,495,555
Total		383,119,175
Ventura Avenue		
1916	1	2,650
1917	1	7,100
1918	1	23,609
1919	2	38,435
1920	5	105,185
1921	6	127,674
1922	13	685,247
1923	18	1,423,187
1924	27	1,831,903
1925	50	6,999,403
1926	76	14,795,495
1927	106	17,808,704
1928	141	18,920,942
1929	137	20,934,388
Total		83,703,922

In these years a number of high gas-oil ratio wells have been shut in. Eighty such wells are now shut in.

Ventura has been developed by regulated drilling. There still remains from two to five years more drilling to be done in this field. While more than 200 strings of tools have been run at one time at Long Beach, there has never been a time when more than 50 strings were run at Ventura.

Needed to Prevent Waste

This field has demonstrated that unit operation, or some sort of control, is necessary to protect the deposit from waste. No matter where the first wells have been drilled on this structure, they eventually become most wasteful gas wells as they grow older. The gas-oil ratio in wells increases 10 and 20 fold with age; i.e., from 1,000 to 10,000 to 20,000 cubic feet of gas per barrel of oil. Such excess gas comes out of solution and leaves unrecovered oil in the ground. The remedy is to shut in the old wells when their gas-oil ratio increases above the general average of new wells. A common ownership would permit this being done. Near unit operation does not. By some, it is thought that the new gas law contains in it the remedy of such a situation. Thus far the remedy has not been applied.

Unit operation has been emphasized in recent years as the discovery of so many fields has demonstrated the need of a complete control of excess production. This recent experience has demonstrated the inability of the industry to handle all of the oil that can be produced. Though not now generally accepted, the truth will soon be understood that the industry must leave the oil stored in the container nature made until the oil can be used. The continued storing of the produced surplus has ceased to be the remedy of overproduction. What once was thought to be a balance wheel has now become so heavy as to be a burden on a part of the industry and a threat to the remainder.

The same may be said as to curtailed production. A heavy investment in oil wells exists that calls for a return of the principal and a profit on the investment. At the slightest sign of an improvement, this poorly controlled production causes a breaking down of voluntary effort. It serves, however, to emphasize the need of a method which eliminates the heavy investment in drilling wells before they are needed and in storing oil before it can be used. Price cuts will inflict punishment without remedying the situation, but the purposes sought by unit operation can accomplish the same thing with advantage to all.

As important and as great as this benefit promises to be, it is well to point out that unit operation will pay its way in lessened drilling and producing costs and in added oil recovery. Particularly in California, where every field has lasted since its discovery to the present time, it is clearly evident that much oil must exist underground and that methods now unknown and now unthought of may yet come into play if the deposit is protected against damage and is held in such condition that methods developed in the future may be brought into play.

Unit Operation in Practice

In the past few years, for the reasons sketched above, the purpose of unit operation (even though not designated by this name) has been given much consideration in California. It has been and is being practiced as to several wildcat wells that have been drilled and areas that are being tested. These are as follows:

Angiola, Tulare and Kings Counties: All leases in this district were taken by

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WORK DONE IN COMBATING CORROSION OF OIL FIELD EQUIPMENT IN 1929

By L. G. E. Bignell*
Petroleum Engineering Editor

Surveying what was done in 1929 in meeting problems of oil-field equipment corrosion, one is struck by the fact that fewer meetings were held for discussion of these problems and fewer papers written than in any year since the subject engaged the attention of petroleum engineers.

This does not mean that progress has not been made, for a great deal actually has been accomplished. Recommendations that accompanied field reports have been put into actual trial and some results obtained are gratifying.

The type of papers prepared also has undergone a change, for they now deal with things accomplished rather than recite damages and suggest possible remedies.

Some of the most notable work pointing the way for future solution of many pipe line problems is that done for the United States Bureau of Standards by Drs. K. H. Logan and Gordon N. Scott, dealing with tests of pipe coatings and reports on soil conditions.

Many facts of great importance have been isolated and defined by these two men, not only indicating what may be done in some instances to retard corrosion, but showing that things formerly considered of importance have little bearing apparently upon the practical results.

In April, 1928, an all-aluminum 500-bbl. field storage tank was put into actual field use in Crane County, Texas, along with another tank of the same capacity but made with steel bottom and lower section of side sheets and aluminum upper ring of side sheets and deck.

Results of Tests

In April, 1929, after a little over one year's use these tanks were opened and examined by a group of engineers and chemists. The results of the test were enlightening.

Other tanks made entirely of steel and used in the same battery with the two test tanks had some of their side and bottom sheets destroyed by corrosion in six to nine months, but the all-aluminum tank was in actual use for 18 months before holes were found corroded through the bottom, when the tank was examined for a second time in September, 1929.

This field test of the aluminum tank confirmed the already known fact that there is no stable combination of that metal and hydrogen sulphide or any of the sulphur compounds found in the oil and water as produced by these wells.

This metal is inert in the presence of hydrogen sulphide gas, or sulphur-bearing crude oils and therefore should be of definite value for the construction of equipment that can be fabricated from it provided the finished article has sufficient tensile strength for its required duty.

Decks for large tanks in which sulphur-

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Wirt Franklin Hopeful for Tariff

After Interviewing Members of Senate and House He Believes There Is a Better than 50-50 Chance of Getting Legislation

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Feb. 15.—After having spent two weeks in Washington, Wirt Franklin, president of the Independent Petroleum Association, who headed the delegation from Oklahoma and other oil-producing states for the purpose of advocating a tariff on petroleum and its products before Congress, was seen by the writer today and asked how he viewed the prospects for getting this legislation during the present session of Congress. Mr. Franklin replied:

"I am of the opinion, from the courteous reception which has been accorded us by members of the Senate and in the hearing before the Committee on Ways and Means of the House, and from the great interest displayed on the part of members of both House and Senate in the subject, that we have better than a 50-50 chance of securing a tariff on oil and refined products in the pending tariff bill.

"Upon our arrival here we found there was little real knowledge concerning the actual conditions of the oil industry in the great producing states. There was a sincere desire to learn the true conditions and we have found that when the facts and circumstances have been presented as they actually exist there was a ready response to remedy the ills of the industry."

"What have been the chief arguments used by you that you believe have influenced senators and representatives to vote for a tariff on petroleum and its products, although they were not in favor of such a tariff when you arrived?" Mr. Franklin was asked. Mr. Franklin replied:

Necessary to Curtail Imports

"I think it might be stated that there was no real opinion on the part of senators and representatives either for or against the tariff on oil. When it was explained to them that the oil producers in the United States, both large and small, had, during the past year, consistently and sincerely co-operated in the conservation program through curtailment of domestic production to bring about a balance between supply and demand; that the efforts of all the producers in this direction had culminated, in the fall of 1929, in complete success to the extent that not only had production been curtailed to the demand therefor, but even oil had been taken from storage in the Mid-Continent district, in an amount exceeding 6,000,000 bbls. during the year, and that all this curtailment had been done, especially in Oklahoma, without dissent from any source, and when it was further shown that after domestic production was curtailed, imports on foreign oil were increased almost to the exact ratio of the domestic production, so that there still remained an oversupply of oil, and it became apparent that the conservation and curtailment program, unaided, had proved a failure, it became apparent that it would be necessary to curtail imports to round out the conservation and curtailment effort, in order to make that effort a success; that without a curtailment of imports commensurate with the curtailment of domestic production, the so-called conservation program must be a complete failure.

"It has also been explained by the delegates representing the oil producers throughout the United States, both before the Committee on Ways and Means, and in the hearing which President Hoover so graciously granted us, that the imports of foreign oil and refined products have not resulted in a lower price for gasoline or engine oil to the consumers; that the price of gasoline at the ports of entry along the Atlantic Coast—Baltimore, Philadelphia, New York and Boston—has been slightly higher to the consumer at the filling station than in the interior cities of Chicago, Kansas City, St. Louis and other points, and it would naturally be supposed that if our foreign crude and refined products would be beneficial to the consumer, it would be at points where the same could be delivered by water transportation.

Gasoline and Crude Prices

"Furthermore, we have shown that the price of gasoline throughout the United States has been practically the same in 1929 as it was in 1926, although there is an average difference in the price of crude oil between the two years of 84 cents per barrel, the price of 36 gravity crude in the Mid-Continent Field being $2.04 per barrel in February, 1926, and the same grade being $1.20 per barrel in February, 1929, with relative prices throughout the remainder of the same two years. It has been shown that the price of fuel oil has been reduced from $1.28 per barrel in 1926 to an average of about 75 cents per barrel on the Atlantic seaboard in 1929, and prices ranging from 50 to 60 cents a barrel in the Mid-Continent states in 1929. This has occasioned, not conservation, but waste, in that oil which might have been used for higher purposes has been burned under boilers and for other industrial uses, displacing in 1929 approximately 115,000,000 tons of coal, and throwing out of employment more than 50,000 American citizens formerly engaged in the mining and transportation of coal.

"It has also been shown that, whereas the domestic oil industry probably pays more kinds of taxes to all branches and divisions of government in the United States than any other industry, it has been the main support of state governments, colleges and schools of the oil-producing states, and in the construction of good roads, the imported oil has, on the other hand, contributed nothing whatever to the support of the Government of the United States or any of the subdivisions thereof.

"It is apparent that this question does not involve alone the welfare of the thousands of men engaged in producing oil throughout the United States, including the farmers owning the lands who receive their one-eighth royalty, but that the entire business and industrial interests of the oil-producing states have been builded around and because of the oil industry in those states, so that the entire citizenship of all these states have come to rely and be dependent upon the oil industry to a very great extent.

"The further curtailment of the production of oil in the United States must result in a gradual paralysis and choking to the point of strangulation of the industrial and economic life of the oil states. A cessation of drilling and development would result in great loss to the steel industry, to the lumber industry, and the many other allied businesses chiefly dependent upon the continuation in a sane and orderly manner of the exploration and development of that vast domain in the United States reaching from the Canadian border to the Gulf of Mexico, which is all prospective oil territory and which contains reserves of oil sufficient to supply the demand of the United States of an indefinite period to come.

"The United States market for oil and refined products should be reserved for and supplied by oil produced in the United States, by citizens of the United States, and the hundreds and thousands of men now employed in that industry should be permitted to go ahead, in a sane and orderly manner with the development and production of oil to supply that demand.

"The frank, open and fearless statement of these facts by the men actually engaged in the industry, from every state in the Union which produces oil, is having a profound effect upon the members of Congress. We have presented the above personally to a large majority of the members of Congress."

Teagle Makes Statement on Prices

Standard Oil Co. of New Jersey, He Says, Was Forced by Conditions to Lower Crude Markets. Recites Conditions

NEW YORK, Feb. 18.—Walter C. Teagle, president, Standard Oil Co. of New Jersey, in his first public statement regarding recent reductions of crude oil prices in the Mid-Continent by subsidiaries of his company, declares that fluctuations in the price of crude and all other commodities are not ultimately controlled by individuals and corporations but by conditions.

He declares that his company recognizes as sincere the criticisms of the price revision, and in the interest of conservation sets forth the situation which forced this action.

Mr. Teagle's statement is given in the February issue of The Lamp, official publication of the company, and follows in full:

"Criticism of the revision by companies affiliated with the Standard Oil Co. of New Jersey in the posted price of crude oil has been expressed by the producers. It has been represented that the revision was not justified by conditions and that it would cause the withdrawal of support from the conservation movement. The Standard Oil Co. of New Jersey accepts these expressions as sincere and in the interest of conservation set forth the situation which forced this action.

"Whatever difference of opinion may exist as to the responsibility for the surplus stocks overhanging the markets, there is a unanimity of view that these stocks are oppressively large and that if they continue to increase they will materially affect the result of this year's operations.

"Stocks of gasoline in storage increased in 1929 to a total of 43,000,000 bbls. at the end of the year. In January they were further augmented, and the process of accumulation continues. Such a situation plainly forecasts a repetition of the experience of previous years when excessive runs to stills in the winter months reacted adversely upon the gasoline market during the season of large consumption.

"The Standard Oil Co. of New Jersey through its affiliated companies in addition to its own production is purchasing each day large quantities of crude oil at the posted prices. On the other hand a number of the other companies with refineries on the Gulf or in the Mid-Continent Field are producers of crude in an amount equal to or in excess of their own refinery runs. They are therefore more concerned with the posted price of crude as sellers than as buyers. These producer-refiners have been able to sell products at prices below the equivalent of the posted price of crude at the wells plus transportation and manufacturing cost.

"When refinery runs exceed market needs, and create a surplus of products sufficient to depress the wholesale price of gasoline, the value of crude is being reduced even though the posted price is unchanged.

"This is what happened: On June 7 last the weighted average wholesale price for U. S. Motor gasoline in Group 3, Oklahoma, as reported by Pratt's Oilgram, was 9.25 cents per gallon. At the time of the revision in the posted price of crude on January 15 the price as reported by the same authority had declined to 6.58 cents, a reduction of 2.67 cents per gallon. The Bureau of Mines reports an average yield from Mid-Continent crude of more than 21 gallons of gasoline per 42-gallon barrel. Therefore, with no change in the posted price the actual value of this grade of crude has been reduced 56 cents per barrel by the decline in the wholesale price on gasoline.

"Fluctuations in the price of crude and all other commodities are not ultimately controlled by individuals and corporations, but by conditions. The economics of any business may run contrary to the general trend of prices on raw material and products for a time, but in the end such an unsound condition must succumb to correction by the law of supply and demand.

"Since the only measure of the value of crude is the price realized for the products, the companies affiliated with the Standard Oil Co. of New Jersey found it necessary to adjust their posted prices at which they would purchase crude to a gasoline market that had been steadily declining.

"The Standard Oil Co. of New Jersey believes that conservation and the prosperity of the industry cannot be realized while additions are being made to the already burdensome stocks, and that the immediate problem before the industry is to affect a material decrease in the present surplus stock of gasoline. This company's operations are in the balance and its stocks of gasoline as well as crude are less than they were this time a year ago.

"This company is not now and never has been interested in depressing the price of crude oil. Its producing investment is of such size that the company is seriously affected when posted prices for crude are at an unreasonable level. But by virtue of its activities as a merchant this company is keenly aware of

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Refugio Crude Big Competitive Factor

Oil from 3,700-Foot Level Primarily a Gas Oil Fuel. Demand from Refiners and Marketers Constantly Increasing

By Neil Williams

HOUSTON, Tex., Feb. 17. — Almost unrecognized until lately by the industry generally, there has been going on at Refugio, Tex., a steadily increasing development which has reached such proportions as to make itself felt in the producing, refining and marketing situation, not only on the Gulf Coast but also in the northeastern and eastern states. From a production standpoint, Refugio has attained a place well in the lead of any field in the coastal or Southwest Texas divisions, both in daily output and in proved and potential productive area. Although an area extending approximately 5 miles from the northernmost to the southernmost wells and about 2 miles from the west to the east already has been proved, at no point on the eastern side have the limits been determined definitely. The opening of a deep sand pool around 5,400 feet just to the east of the present 3,700-foot area and in which production is known to extend over a mile from north to south, and the late finding of a still lower sand at 5,900 feet in a wildcat some 11,000 feet farther to the northeast, indicates a producing territory rivaling that of any other individual field in the country.

Continual extensions of producing area have necessitated constant revision of estimates of potential output. Early operations at Refugio pointed to a rather unsuccessful venture which would be prevented from any important development by peculiar sand conditions and salt water problems. The spread of production to all sides of the large original gas-producing area, thence to a townsite and small ownership play, together with the gaining of knowledge of how to handle the peculiar salt water situation and the high gas pressures, have resulted in a constant and rapidly increasing daily production. The daily production at this time is around 40,000 bbls. daily, far above earlier estimates, and with a vast undeveloped territory even within the present outer wells, an apparent deep prolific production in at least two new lower sands just touched and a consistent flowing record of all wells completed, a guess on the future of Refugio would be hazardous.

Cheap Crude

From a refining and marketing standpoint, Refugio offers a large potential source of cheap crude. The recent reduction in posted price to 55 cents has attracted the attention of refiners and marketers to this fact and as a result the movement of this crude is beginning to prove a serious competitive factor for some oils and particularly high gravity fuel oils moved out of the Mid-Continent. Refugio crude from the 3,700-foot level, which comprises the bulk of the present production, is peculiar in that it primarily is a gas oil fuel and at the present price and without refining marketers have been taking advantage of this point.

The extent to which Refugio crude marketed directly as fuel oil can compete with Group 3 refinery fuels is indicated concisely in the following table:

	Tank rate to Chicago	Price at refinery of field	Price at Chicago
Group 3 fuel ...	$0.90132	*.75	$1.65132
Refugio crude ..	1.01010	.55	1.56010

*18-22 gravity fuel; price on higher gravity fuel or gas oil would show even greater difference in favor of Refugio.

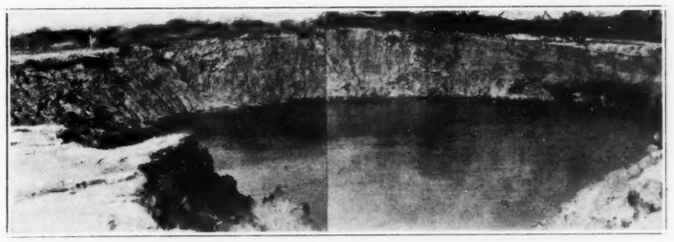
An analysis of the 3,700-foot horizon Refugio crude shows the possibilities the crude holds as a marketing and refining factor. It follows for an early sample:

Gravity (A. P. I.)	22.9 degrees	
Water and sediment*	.25%	
Sulphur	.15%	
Heat value	19,450	b.t.u.
Yields—	%	Grav.
Gas oil	50	29.2
Light lub stock	20	24.1
Medium lub stock	17½	19.1
Asphaltic residue	12½	...

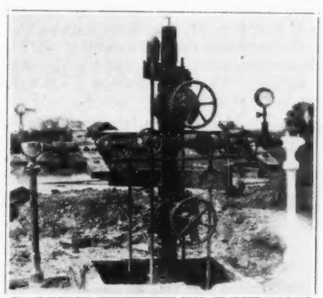
*Many samples show even less percentage of water.

Demand Increasing

Because of the fuel oil desirability of this crude and the favorable marketing situation, the demand for it by marketers has been constantly increasing, but this situation may be more or less temporary. Refugio is only a comparatively short distance from the Gulf of Mexico and shipping facilities and now that adequate pipe line capacity to the Gulf has been provided, more of the crude probably will be moved south and by water to the large refiners on the coast and on the Atlantic Seaboard. As the present low price for



Mammoth crater blown out by wild gas well at Refugio.



High pressure well (Union Producing Co.'s No. 2 Powers) showing line frozen over. This well is from the new deep sand and is flowing some oil on small choke.

Refugio crude has been largely the result of lack of outlet and storage for a rapidly increasing production, the provision of an adequate outlet by pipe line and water route probably will result in an increase in the Refugio crude price to a point where tank car movement of the crude north as a competitor of fuels of other areas will be prohibitive. With it possible to move Refugio crude readily, the competition of this crude probably will be felt mostly by West Texas crudes, which not only possess less desirable refining value but also necessitate a long pipe line run to the coast as against Refugio's few miles.

Movement of Crude

Contracts for Refugio crude now being filled or to be started shortly require the movement of a greater amount of crude from the field daily than now is being produced. Although there is considerably more than 500,000 bbls. of crude in storage, the excess demand for Refugio crude over daily production would indicate the congested situation of the past few months as temporary. Where this crude is moving or is to be moved on regular contract is shown in the following compilation of regular contracts now being filled or about to be started:

Buyer—	Approx. daily shipment (bbls.)
Tank Car Movement North	
Henry L. Cross, Chicago (600 cars monthly)*	4,000
Shell Pet. Corp., Roxana, Ill	3,000
Sun Oil Co., Toledo, O., refinery	2,000
Crown Central Pet. Corp., Houston	2,000
Gulf Coast Pipe Line Co. at Port Aransas	
Cities Service, Boston and Philadelphia	10,000
The Texas Company, Port Arthur	5,000
Humble O. & R. Co., Harbor Island†	6,000
Tank Cars South to Shipment Terminals	
Miscellaneous	15,000
Total	47,000

*Contract about completed. †To start on completion of 20,000 feet of 6-inch line from Gulf Coast Pipe Line Co. terminal to Humble terminal.

These contracts do not include short term or numerous small lot immediate shipment purchases by tank car or movements of the deep sand higher gravity oil to Grayburg Refining Co. at San Antonio, Motor Fuel Products Co. (subsidiary United Gas Co.) at Laredo, Tex., and other such points, or spot cargoes which Gulf Coast Pipe Line Co. is able to move from its terminal in addition to the regular contracts. The latter company now has pipe line capacity from the field to its terminal at Port Aransas of roughly 30,000 bbls. in excess of its regularly contracted sales at this time and with the building of additional storage facilities, both at the field tank farm and at the terminal farm, is in a position to handle the entire present daily capacity of the field.

Shipment Handicaps

The principal handicap to Refugio in the past has been the difficulty in getting shipment. As the field generally was not recognized as of commercial importance it was not until along in 1929, a year after the opening of the field, and not until production began to mount rapidly that a pipe line was laid. Even then the present production was not anticipated and only a 6-inch and 4-inch line was put down. This line was started by the Benedum & Trees interests but before completed was sold to the Gulf Coast Pipe Line Co. organized by the Morgan interests of San Antonio. The line, extending the 38 miles from the field to Port Aransas, with a capacity of only 10,000 bbls. daily, has been the only pipe line outlet until this year. During January the company put in a new pump station at Midway, which increased the capacity to 15,000 bbls., and the past week the new 10-inch and 8-inch line was put in operation by the same company, boosting the capacity to around 50,000 bbls. daily.

Thus it can be seen that until now the greatest burden for moving the ever-increasing production has been through tank cars. With only one railroad through the field and the immense volume of business to be done, congestion has followed. However, loading rack capacity for 186 cars daily has been provided, which is distributed as follows:

Owner—	Size (cars)	Capacity (cars)
Houston Oil Co.	42	120
United Gas Co.:		
Houston Gulf Gas Co.	10	22
Union Producing Co.	8	16
Saxet Oil Co.	8	16
Gulf Coast Pipe Line Co.	6	12
Total	74	186

This loading rack capacity, together with the new increased pipe line facilities and additional storage being provided is relieving the Refugio situation for the time being, although the continued active development of potential area is expected to boost the daily production of the field to the outlet capacity. In this connection it might be interesting to note the storage facilities already provided in addition to the actual field storage. That storage is as follows:

	No. tanks	Capacity (bbls.)
Gulf Coast Pipe Line Co.:		
Refugio tank farm	3	55,000
Aransas Pass terminal	*4	55,000
Houston Gulf Gas Co.	2	80,000
Houston Oil Co.	1	80,000
Independent Oil & Gas Co.	1	80,000
Total large storage		765,000

*Two of these under construction.

General view of a part of the Refugio Field being drilled on the townsite.

"Spanish" type derrick set up on all Refugio tests; so constructed to permit master gate and blowout preventer below derrick floor.

Deep Sand Production

Although at present there is only about 2,000 bbls. daily of deep sand production, further development of that potential

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Gas Bubbles Within Capillary Spaces

Their Presence Changes the Law of Flow and the Distribution of Force. Has Often Been Misinterpreted

By Ionel I. Gardescu
Petroleum Engineer, Research Department, Gulf Production Co.; Lecturer in Petroleum Technology, University of Pittsburgh.*

Natural gas influences the movement of oil through reservoir rock by affecting the physical properties of the oil and the pressure within the reservoir. The presence of gas bubbles changes the laws of flow and the distribution of forces.

The problem of flow of oil and gas through a porous rock is complex, and most authors, in order to analyze their problems, have found it necessary to make or accept certain generalized assumptions. Some of these assumptions, particularly the ones dealing with capillary phenomena and molecular forces, have not received sufficient attention and by lack of understanding have often been misinterpreted.

Herold has called attention to the resistance offered by gas bubbles in capillary spaces and has drawn some interesting conclusions with regard to the action of natural gas in a reservoir rock. He has duplicated an experiment of the French physicist Jamin, has interpreted his findings in terms of molar mechanics, and, from experimental observations, has made a number of assumptions which he later applies in discussing problems of natural flow and recovery of oil. The Jamin action is an assumption because it lacks a physical proof and has never been determined quantitatively.

Tickell attempts to develop a formula expressing the work performed by a distorted bubble. H. A. Wilson, in the recent publication of the American Petroleum Institute on the function of natural gas, discusses the phenomenon in terms of classical physics. Both contributions are incomplete and offer no experimental data.

This paper includes a study of the static condition of equilibrium of gas and liquid bubbles confined to capillary spaces. In order to avoid any possible confusion, it is proposed to restrict the term "Jamin action" to a boundary effect caused by the hysteresis of the angle of contact of the liquid gas interface with the solid surface. The Jamin action as defined occurs both in uniformly and irregularly shaped capillary spaces whenever the liquid does not "wet" the solid walls. The distortion of gas bubbles when forced through small openings is herein discussed as a separate phenomenon. The distortion of gas bubbles in motion will not be included in the present paper.

The Jamin Action

The Jamin action is the resistance caused by the boundary condition of detached gas and liquid bubbles confined to capillary spaces.

In a uniform capillary tube the whole system of alternating liquid and gas bubbles is referred to by Poynting and Thomson as the Jamin tubes, which they describe as follows:

> . . . they are simply capillary tubes containing a large number of detached drops of liquid; these can stand an enormous difference in pressure between the end of the tube without any appreciable movement of the drops along the tube. Thus,

Figure 1—Consecutive drops in capillary tube.

suppose the AB, CD, EF (Figure 1) represent three consecutive drops along the tube, then in consequence of the different curvatures of AB at A and B the pressure in the air at A will be greater than at B, while the pressure at C will be greater than at D, and so on; thus each drop transmits a smaller pressure than it receives, if we have a large number of drops in the tube the difference in pressure at the ends arising in this way may amount to several atmospheres.

The resistance of the bubble is independent of its length (Stanley Herold) since it is caused by a boundary condition at the two extremities of the bubble. The same phenomenon is observed if a column of liquid, confined to a small tube, is subjected to a slight displacement. The column of liquid will behave like an elongated bubble.

If mercury is forced up a narrow capillary tube and then the pressure is gradually diminished, the mercury at first, instead of falling in the tube, adjusts itself to the diminished pressure by altering the curvature of its meniscus; it is only when the fall of pressure becomes too large for such an adjustment to be possible that the mercury falls in the tube; the consequence is that the fall of the mercury, instead of being continuous, takes place by a series of jumps (Poynting and Thomson).

In 1866, M. Nageli, in studying the motion of a column of water in a capillary tube, proved that there is a resistance to flow offered by the surface meniscus of the water column. He assumes that the resistance is due to an increase in viscosity of the interface and explains the Jamin action in terms of this theory.

In 1898, Charles Wolf stated that "the meniscus acts as a wall or diaphragm, preventing the liquid immediately behind it from moving more rapidly along the axis of the tube than along the walls of the tube. The knowledge of the retarding influence of the meniscus would have important applications in the seepage of water through porous media."

In 1916, Marcel R. Daly discussed the Jamin action in connection with the "sealing up" condition of a pool. He expressed the resistance offered by the bubbles in terms of surface tension and the difference of the cosines of the angles of contact.

Hysteresis of Angle of Contact

To better understand the Jamin action, it is necessary to discuss the variation of the angle of wetting. Edser gives the following description: "When a liquid does not spread over a solid, the surface

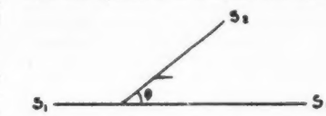

Figure 2—Contact angle for solid and liquid.

of the liquid joins the solid at an angle which, within certain limits, is definite. The angle between the surface of the liquid and the solid-liquid interface (Figure 2) is called the contact angle for the solid and liquid." If S_1 is the gas-solid surface tension, S_{12} the solid-liquid surface tension and S_2 the gas-liquid surface tension, the following relationship must exist when the system is in equilibrium:

$$S_1 = S_{12} + S_2 \cos\theta$$

or

$$\cos\theta = \frac{S_1 - S_{12}}{S_2} \qquad (1)$$

In order to "wet" a surface, the contact angle must be reduced to zero. In other words, the difference between the surface tension of the solid and the surface tension of the solid-liquid interface must be equal to or greater than the surface tension of the liquid.

Sulman found that for most solids in contact with water, the observed value of the contact angle depends on the way in which the first condition is arrived at. When a liquid reaches its final state of equilibrium by spreading over the dry surface of a solid, the contact angle is greater than when the liquid reaches its final state of equilibrium by receding from a previously wetted surface. It has been suggested by Sulman that $(\theta' - \theta)$, the difference between the maximum and minimum values of the contact angle, should be called the hysteresis of the contact angle. This difference, although variable, runs in the neighborhood of 50 degrees.

Scarlett, Morgan and Hilderbrand give the following account with regard to the hysteresis of the contact angle:

> A plane surface of the solid is inclined to such an angle that the liquid-gas interface remained horizontal, as tested by oblique reflection, right up to the solid surface (Figure 3). It was found, however, that a horizontal interface could be maintained over long periods of time with

Figure 3—Hysteresis of contact angle.

> widely different angles of inclination of the plate. An interface which climbs up the plate may be made horizontal either by increasing the inclination of the plate toward the horizontal, or by lowering it with inclination unchanged. It was expected at first that a true equilibrium angle of contact would be approached if sufficient time were allowed. It was found, however, that the inclination of the plate could be varied over wide angles without giving rise to any movement of the line of contact over periods up to 24 hours.

The Jamin Tube

Consider now the Jamin tube and assume that the liquid does not wet the surface of the glass. Let θ and θ' be the two angles of contact (Figure 4). From A to B the surface of the glass is wetted by a liquid, while from B to C the surface of the glass is dry. Considering a slight displacement of the bubble from A to A′ and B to B′, it will be noticed that at B the liquid comes in contact with a dry surface, while at A the liquid comes in contact with a wet surface. The contact angle θ' is greater than θ.

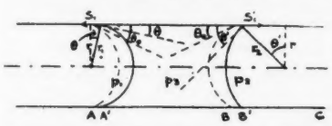

Figure 4—Hysteresis of contact angle in Jamin tube.

The law of minimum free energy tends to bring the meniscus of the liquid to a spherical surface. We can, therefore, readily calculate, as a first approximation, the two radii:

$$r_1 = \frac{r}{\cos\theta} \text{ and } r_2 = \frac{r}{\cos\theta'} \qquad (2)$$

Writing the equation of Laplace for the pressures exerted on the interfaces,

$$p_1 = p_3 + \frac{2S_2}{r_1} \text{ and } p_2 = p_3 + \frac{2S_2}{r_2}$$

$$\therefore p = p_1 - p_2 = 2S_2\left|\frac{1}{r_1} - \frac{1}{r_2}\right|$$

by substituting the values from equation 2 for r_1 and r_2

$$p = \frac{2S_2}{r}(\cos\theta - \cos\theta') \qquad (3)$$

Edser expresses the hysteresis of the angle of contact in terms of surface tension by assuming that the surface of the solid from which the liquid has just receded has a surface tension higher than the surface tension of the original dry surface. In other words, S_1 is greater than S_1'. S_{12} and S_2 are respectively equal to S_{12}' and S_2'. We can therefore write:

$$\cos\theta - \cos\theta' = \frac{S_1 - S_{12}}{S_2} - \frac{S_1' - S_{12}'}{S_2'} = \frac{S_1 - S_1'}{S_2}$$

Substituting in equation 3

$$p = \frac{2}{r}(S_1 - S_1') \qquad (4)$$

The resistance p opposed by the bubble is proportionate to the variation of the solid-surface tension and inversely proportionate to the radius of the capillary tube. The equation is independent of S_2, the liquid-surface tension, and has only a theoretical significance, because no satisfactory method has yet been developed by which the surface tension of a solid can be measured. Equation 3 can readily be computed when the values of θ and θ' are known. Assuming that we had a way of calculating the variation of the solid surface tension, we could easily compute

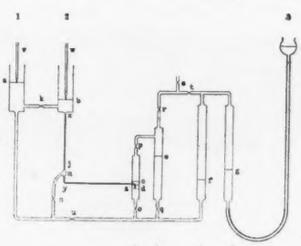

Figure 6—Diagrammatic sketch of apparatus.

therefrom the value of p or "f" which is maximum for a maximum difference between θ and θ'.

It should be noted that the equations are independent of the length of the bubble. The resistance is caused by a boundary condition along the line of contact of the three phases.

Apparatus Used in Experiments

Figure 6 represents a diagrammatic sketch of the apparatus.

The apparatus consists of a fine capillary tube ryx provided with two enlargements j and m. The radius of the capillary tube is 0.011 cm. Enlargement j serves to receive the gas bubble subjected to distortion. Enlargement m connects the capillary tube with pressure reservoir 1. The difference in pressure on the two ends of the gas bubble is recorded by the difference in level of the liquid in reservoirs 1 and 2. Burettes 4 and 5 are used for obtaining the gas bubble which is forced into the capillary yz. Burette 7 transmits the pressure from the leveling reservoir 3 through the intermediate burette 6. It was necessary to have the two burettes 6 and 7, which do not communicate except through the upper part, because burette 7 is contaminated by the rubber tubing connecting it with reservoir 3.

Before it is used, the whole apparatus is thoroughly cleaned, including the stopcocks. The liquid to be used is then introduced through reservoir 1. Stopcocks u, o, p and k are closed. The liquid fills enlargement m. Part flows into burette 4 through capillary yz and part fills up enlargement j and rises to reservoir 2. As soon as the liquid has reached reser-

(Continued on Page 115)

*Before A.I.M.E., New York, February, 1930.
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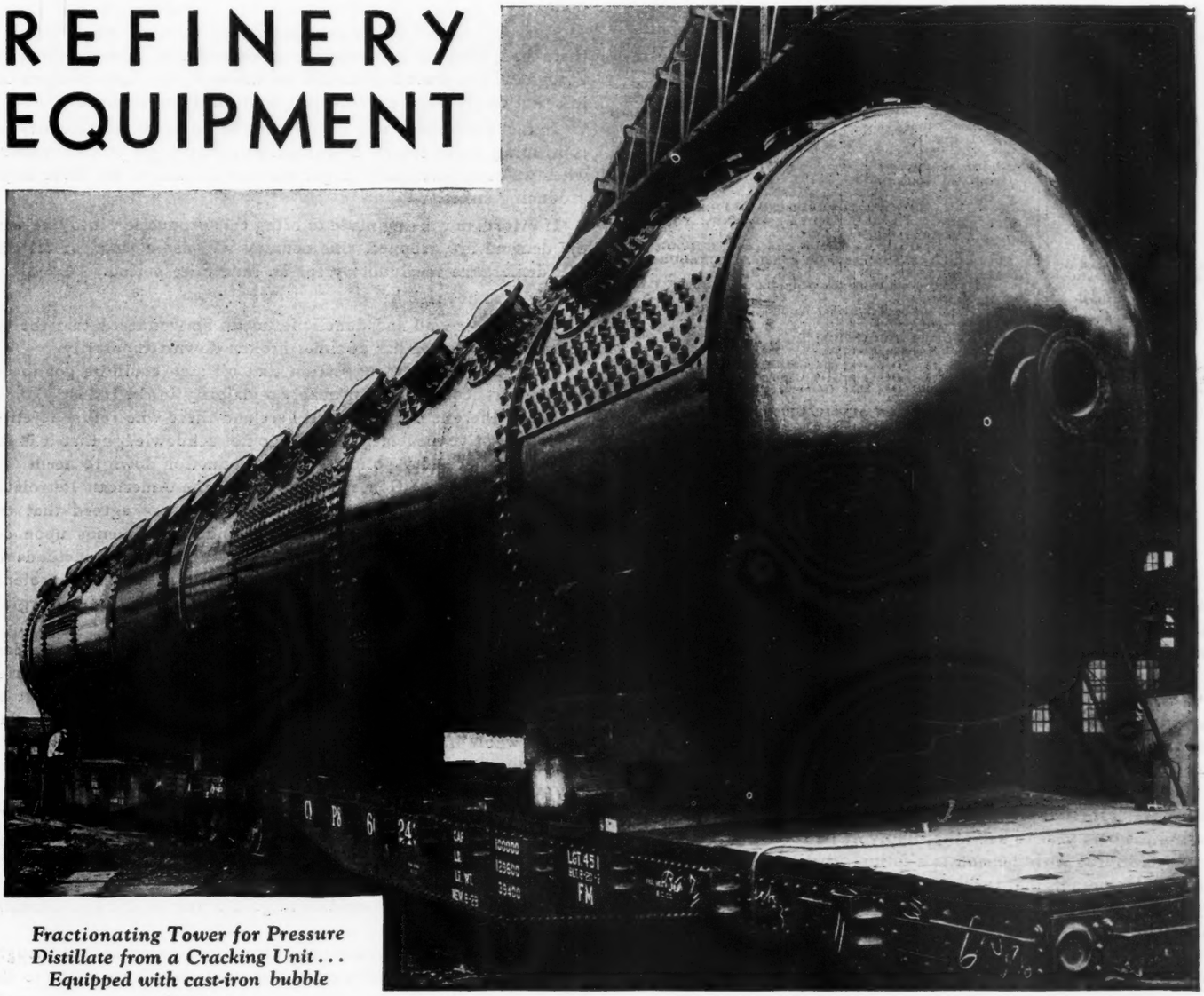

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THE CRUDE OIL REDUCTION

The past week has seen the extension of the crude oil price cut and resulting tank wagon and retail price adjustments until these reductions are now general throughout the entire United States, outside the West Coast.

The original reduction was followed by considerable criticism and some speculation. The criticism resolved itself into a demand for a tariff on imported oil which has been presented to Congress and the President. The speculation was ended by the meeting of the cut by the other purchasers.

In some quarters, however, the price reduction has been interpreted as a positive demonstration that the voluntary effort made during the past year to keep the supply of petroleum and petroleum products in line with demand is a failure, that the whole movement was a delusion and that it might as well be dropped and the industry return to the old conditions of everybody looking out for himself alone and getting what he could when he could.

Cut or no cut, tariff or no tariff, the industry cannot afford to return to those conditions which so often brought demoralization on its entire market.

With the vast potential production in sight any slackening of the co-operation in the effort to avoid further overproduction would flood the country with the greatest excess it has ever known.

On sober reflection every thinking man in the industry will acknowledge that, regardless of what his views may be on other phases.

The continuance and extension of that co-operative effort is the most necessary policy in the industry today.

Some have said, bitterly, that they might as well have kept on producing, that the price was cut anyway.

But if they had kept on producing and kept out of the co-operative movement the price would undoubtedly have been cut that much sooner. On the other hand the industry has closed what was a reasonably good year for the majority of those engaged in the business.

It is unquestionable that this was brought about by the efforts that were made during the past year to keep production down to demand and that there never was a time during that period when, if crude oil production had been allowed to go unchecked and flood the market, lower prices for crude oil and refined products would have resulted with an unprofitable year as a consequence of development.

It can be admitted that the co-operative movement did not accomplish everything it was hoped to accomplish, but that was not because the policy was wrong but because it fell short in execution.

The industry was warned early in 1929 that it would need to keep production down to a certain basis. That basis was not approached until near the end of the year when most of the damage had been done.

But the oil business would have been in much worse shape if there had been no co-operative movement and whatever may be thought of the present situation we cannot expect improvement unless that co-operative movement is continued and expanded.

In fact there never was a time when there was more necessity for continuing those efforts at curtailment than right at this moment when we have potentially larger excesses in each of the three major producing states.

If efforts now being made to bring this production into line with the demand are dropped, this country will see a flood of oil that will demoralize the industry for an indefinite period.

We dare not risk it.

When all is said and done it is not to be wondered that the co-operative movement has at times broken down temporarily.

Five years ago the suggestion that oil men could be got to co-operate was scoffed at by probably a majority in the industry.

Today there is but a handful here and there who refuse to enter the co-operative movement or who do not acknowledge that it is the logical and necessary policy to keep production down to needs.

The Federal Oil Conservation Board, the American Petroleum Institute, the practical men of the industry are agreed that the sound and economic operation of the industry depends upon co-operation, not only in regulating production but in methods of operation. The big topic at the annual meeting of the Petroleum Section of the American Institute of Mining and Metallurgical Engineers this week was unit operation.

There have been setbacks in the co-operative movement before but they were not significant when determination to persist carried it forward. The danger at this time is a division of sentiment on other phases which should not be allowed to obscure this vital point.

The whole industry stands to gain or lose according to whether it continues or hesitates on this program of co-operation against overproduction, whether of raw material or finished products.

The thing for the industry to do now is to keep on with the work as it has been doing and profit by the mistakes of the past, developing a program that will fit requirements for the remainder of the year.

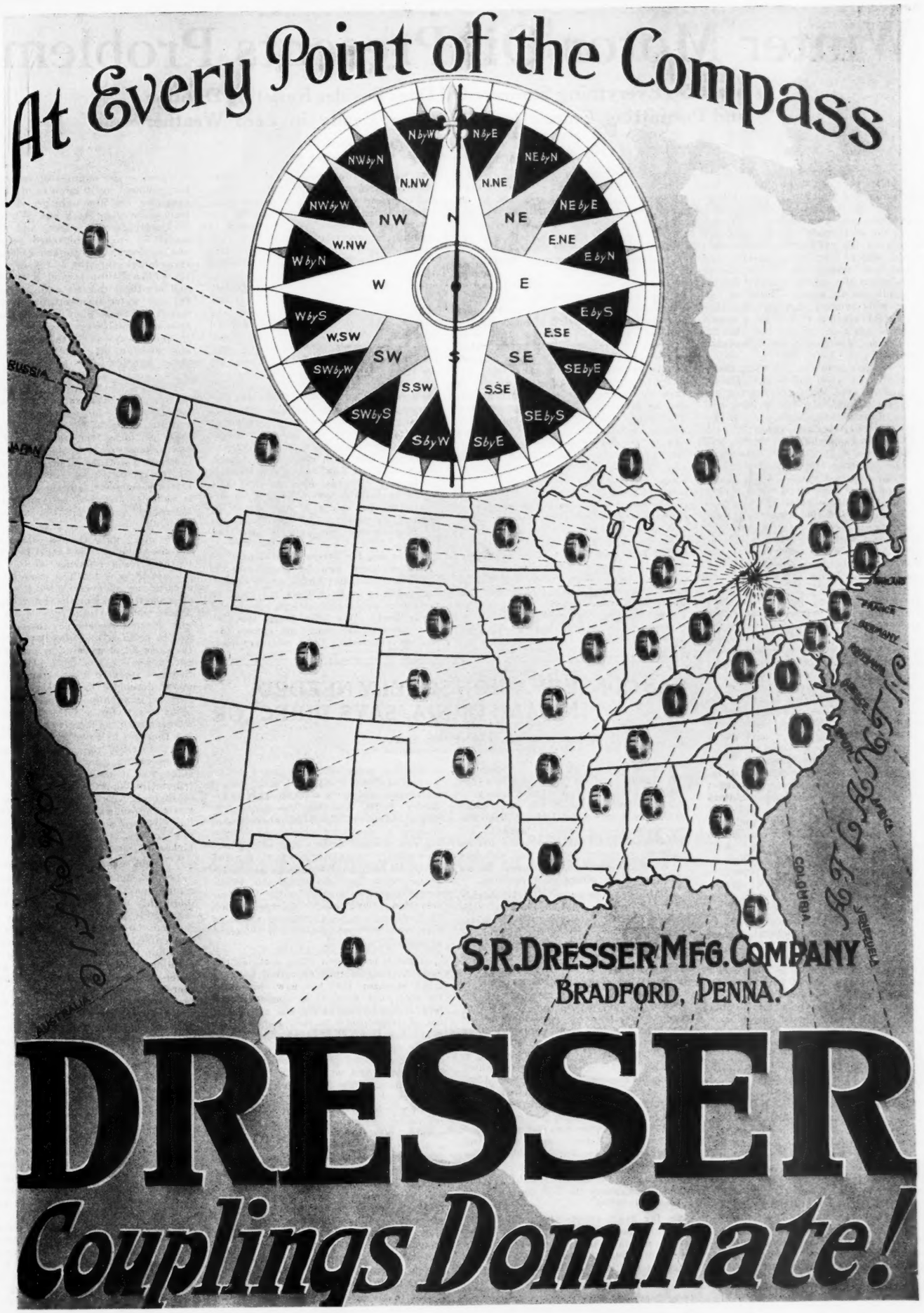
If this is done 1930 should be as good a year as the year recently closed.

The lowering of the crude price structure emphasizes the thought that in the coming months more attention should be given to the orderly operations of the refineries and the curtailment of throughput in line with demand. If operations are allowed to get out of control they will, as indicated over the past six weeks, tear down the entire market structure.

Refiners are inclined to base their operations too much on the crude oil throughput of their stills rather than their gasoline production.

As has been said numerous times the development of manufacturing processes has so increased gasoline yield per barrel of crude oil that old comparisons no longer apply. The refiner by adding cracking facilities or increasing purchases of natural gasoline may increase his gasoline output in excess of the demand for motor fuel without adding a barrel of crude oil to the quantity of crude required by his plant.

Each refiner can determine what his gasoline demand will be. Fortunately for the industry we are assured of at least a normal increase in consumption this year. To add to the supply 2 or 3 per cent more than the available demand will simply mean a duplication of the past year in which too much gasoline was run to storage culminating in a topheavy situation which brought down not only the refinery tank car but the tank wagon and service station prices and finally the raw material market.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Winter Motor Oil Presents Problems

Must Do Everything Summer Oil Does Besides Resisting Dilution and Permitting Engine to Turn Over Easily in Zero Weather

By A. E. Becker and W. C. Bauer
Fuel and Lubricating Section, Standard Oil Development Co.*

In making the present-day year-round automobile the car manufacturer has complicated the problem for the refiner so far as the making of suitable lubricants, fuels and greases are concerned. By the use of thermostatically controlled shutters on his radiator or thermostats in his water circulating system and manual heat control for the carburetor he has given the engine summer operating conditions in winter. When he can also give us summer starting conditions during cold weather it will be a simple matter to select the proper fuel and the ideal engine transmission and differential lubricants.

The summer crankcase oil must maintain a film between piston and cylinder wall and between shaft and bearing under conditions of hard fast driving and long hard pulls up mountain roads. Its distillation characteristics must be such that volatility loss and consumption will not be excessive. It must not deteriorate by forming sludge or excessive acidity during use and that portion which passes the piston rings must burn clean with a minimum carbon deposition. This is relatively simple. But the winter oil must do everything the summer oil does and besides must resist dilution, permit the engine to turn over easily at zero and subzero temperatures and be fluid enough to pump readily. This is not so easy to accomplish.

Summer gasolines must have high enough submerged initial boiling points to prevent vapor bubbles forming in the feed lines, the vacuum tank or the carburetor. Otherwise vapor lock troubles will result. On the other hand winter fuels must have sufficient volatility to permit easy starting and yet not cause vapor lock when operating at practically summer temperatures. Another characteristic a cold weather fuel must have is to burn completely in a cold motor and not cause dilution.

What Lubricant Must Do

The summer gear lubricant must lubricate ball, roller and plain bearings; must cushion the gears and maintain quiet operation; must have sufficient drag to slow down the clutch and permit easy shifting; and must not be so fluid that leakage will occur past shaft packings. The same oil is expected to do all these things at 0° F. since nobody changes transmission oil seasonally any more.

These are the problems as the oil refiner sees them. Actual road testing under all conditions is the natural method of attempting their solutions but is slow, tedious and impossible of repetition since test conditions can not be duplicated from day to day or even from hour to hour. Such results are merely indicative. Conclusive results can be obtained only when comparisons are made over a wide range of temperatures and operating conditions and when tests can be duplicated at will.

The fuel and lubrication laboratories of the Standard Oil Development Co. permit fulfillment of these conditions. First there is the bus or chassis test room. This large cork-insulated room contains chassis rolls connected to an external dynamometer and is capable of handling any motor car from the largest pneumatic tired bus or truck to the lightest pleasure car. Here temperatures can be controlled from 35° below to 130° above zero F. The car can be driven at full or part throttle at any speed from the slowest which will maintain engine operation to 80 miles per hour. Operating temperatures can be held more uniformly than on the road. In other words the road is brought into the laboratory and weather conditions made to suit the test desired. Observations and data are easy to obtain. The data can be analyzed, checked and rechecked when necessary. The car, just as the owner uses it, can be tested with the products made for its operation.

Constant Temperature Room

Then there is the smaller constant temperature room, with its dynamometers on opposite sides where the units of the automobile can be separately tested under the same wide variation of temperatures. An extraordinary feature of this room is that any temperature in this range can be maintained within 1° F. Engines can be tested for cold starting with different fuels. The torque necessary to turn the engine over with different oils can be determined at low temperatures. The ability of these same oils to provide efficient lubrication at high temperatures can be studied. The effect of temperature and humidity upon power delivery can also be measured. The efficiency of transmissions when using various lubricants at different operating temperatures can be ascertained. Tests with oil pumps, starters and other units can be made just as easily.

Should temperature control not be required both or either of these dynamometers can be used independently of the constant temperature room for engine tests. In a second building there are two additional dynamometers with engine stands on either end which also can be used for other essential work such as 50-hour oil endurance runs, carbon formation, cylinder and bearing wear, valve pitting and corrosion, gum accumulation, and comparative fuel and oil power tests. This building also contains one of the knock testing laboratories, necessary to maintain a prescribed standard of anti-knock value for each gasoline marketed.

In carrying out a research program designed to answer motor oil questions, either under summer or winter conditions, we select several engines which cover the automobile range in size and type. Some of these motors are mounted in the controlled temperature rooms and connected to dynamometers on the outside. Breakaway and cranking torques are then determined at various low temperatures for both fresh oils and oils of known dilutions. To be satisfactory for service an oil must permit the car's own starting system to crank the engine at starting speeds at the lowest temperatures immediately after recharging the crankcase with fresh oil. It is also necessary to know how soon lubrication is established. This is done in the same rooms by suitable pump set-ups for determining the ability of the oil to be pumped, its resistance to channeling, and its flow through the supply tubes and bearings.

Proving for Severe Conditions

The oil must now be proven for its value as a lubricant under severe operating conditions. Such tests are made in more than one engine at high speeds and heavy loads. We have found that 50-hour tests on one crankcase charge furnish suitable data. These runs are made in cycles of 50 minutes of severe operation followed by 10 minutes of idling. As examples, the 50-minute period in recent tests made with Mack bus, White truck, Willys-Knight passenger, and Chrysler model 72 engines consisted respectively of three-fourth throttle and 1,600 R.P.M., three-fourth throttle and 1,400 R.P.M., three-fourth throttle and 2,000 R.P.M., and one-third throttle and 2,500 R.P.M. Oil and water temperatures were maintained correspondingly high. During such tests oil samples are removed periodically and always prior to the addition of any makeup oil. The examination of these samples and the final drainings gives a continuous picture of the physical and chemical changes in the crankcase oil during use. With balanced manometers a check on oil consumption is made every hour during the idling period. All other pertinent temperature, fuel, power and exhaust analysis data are kept for correlation with the oil deterioration data. At the completion of such tests the motors are completely disassembled, carbon is collected, weighed and analyzed, and the general condition of the engines noted in detail.

Obviously data from a single oil test are meaningless. They must be compared to those for a reference oil. If several oils are to be tested it is essential to run a reference oil every third test to keep an accurate check on the motor condition. These reference tests provide the necessary datum lines whereby the various oils can be rated. It is also imperative that the same lot of gasoline be used throughout such a series of tests. In comparing two oils recently it was found that the power developed by the engine with the first oil gradually decreased during the 50-hour run for a total of 5 per cent whereas with the second the decrease was less than one-half per cent. Only by having maintained the gasoline supply and the operating conditions absolutely constant was it possible to locate and attribute the 5 per cent loss to the quality of that oil. As a further matter of interest the oil which resulted in the high loss in power also deteriorated more rapidly in the crankcase and showed the higher oil consumption.

Cold Cranking Experiments

In the cold cranking experiments the engine under test is first flushed out thoroughly with the oil to be used. The test charge is then placed in the crankcase and the engine run until prescribed oil and water temperatures are obtained. The engine is then stopped by cutting off the gasoline supply to prevent any accumulation of fuel on the cylinder walls and thereby assure the true friction characteristics of the oil under test. After setting the number one piston in a definite position the room and engine are cooled (usually overnight) to the desired low temperature, say minus 20° F., as determined by a number of well-placed thermocouples. The breakaway torque is then measured. A dynamometer stop is used to prevent the engine from rotating more than three or four degrees during this determination. On a definite time schedule motoring torques at a number of speeds from one to 150 R.P.M. are determined. It is essential that the total time utilized be small to minimize heating effects. Following these measurements the engine and room are brought to the next test temperature.

Such tests as these definitely show that breakaway torque is not a factor in engine cranking at low temperatures and that low pour is not necessarily a measure of ease of starting nor the facility with which the oil can be pumped. To il-

(Continued on Page 155)

*Division meeting, Society of Automotive Engineers.

GAS CONSERVATION SORELY NEEDED IN CALIFORNIA, SAYS DIRECTOR

By George Otis Smith
Director, United States Geological Survey*

After five years of eventful history in the oil industry, may I size up the situation as I see it from the Washington point of view? First of all, and fundamental to a successful issue, I have observed in the industry a gradual acceptance of technical opinion as to the guide to executive action; and this has at least led to some agreement as to what procedure offers most promise.

Analyzed in more detail, this highly desirable progress has consisted in "self-restraint actuated by enlightened self-interest." We see emerging the general desire of oil producers for efficiency in operation, which means low cost and high recovery. As shown by facts presented at this meeting, competition in drilling is in direct opposition to efficiency in oil production, in that such competition increases costs and lowers recovery. The only route to conservation of this natural resource and also of the capital and labor involved in making it available is through unit control, which substitutes co-operative, well planned action for competitive, unregulated activity, forced by the individualism of a small minority of landowners or perhaps by a single operator. Or, in terms of actual experience, development of an oil field and its subsequent operation under unit control means the substitution of majority rule for minority rule, yet the minority enjoys to the full the resulting economic benefits.

So far as it affects the public interest, unit operation of oil properties deserves unqualified approval. It means more oil from the same area over a longer period and at lower costs—that is practical conservation. It means underground storage of oil until it is needed for transportation to market—that is ordinary thrift, avoiding the large economic waste involved in aboveground storage. It means an adjustment of supply and demand, rather than letting surplus supply stimulate excessive demand—that is both good economics and long-range vision. You may recall that President Coolidge in appointing the Oil Conservation Board, said: "Overproduction in itself encourages cheapness, which in turn leads to wastefulness and disregard of essential values."

If gas is considered along with oil, the case in favor of unit operation becomes much stronger. Gas has now come into its own, not only as a commodity of large value to the public and a by-product of large profit to the producer, but also what is of even larger importance, as the most efficient agent in producing oil. The escape of gas is therefore a two-fold waste. And so it is that the new California gas law stands on good technology and good economics. That legislation was sorely needed in a state where in the later part of last year, although nearly 1,000,000,000 feet of natural gas a day was being utilized, as much was blown into the air as was used. In the Kettleman Hills in the same months nearly twice as much was wasted as was used, and now the ratio is even worse. Here, indeed, at present field prices, the gas with gasoline content is worth much more than even the high grade oil it brings to the surface. But prevention of such waste, which strikes at both the present and the future prosperity of California, is difficult if not well nigh im-

(Continued on Page 155)

*Before A.I.M.E., New York, February, 1930.

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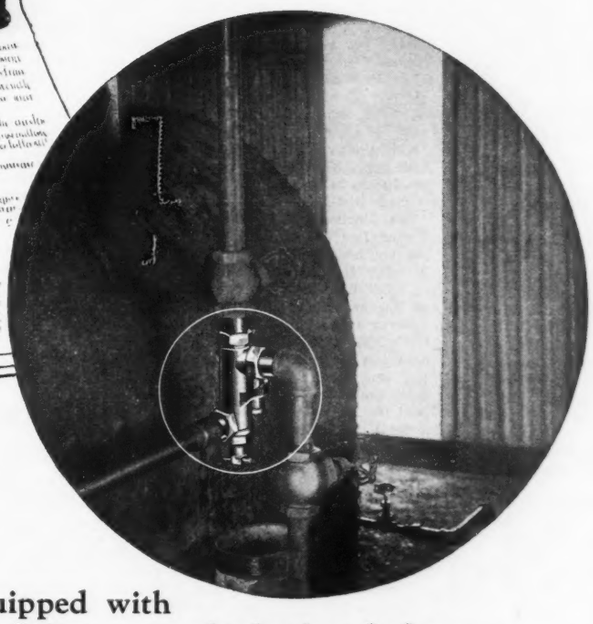
ADEQUATE INSURANCE

PENBERTHY PRODUCTS



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Late News From the Fields

MISSISSIPPI

SHREVEPORT, La., Feb. 18.—Jackson Oil & Gas Co.'s No. 1 Mayes in Section 2-5, Le Hinds County, Mississippi, was bailed in Sunday as a 2,000,000-foot gas well, total depth 2,480 feet with the bottom 20 feet in chalk, but hot brackish water broke in soon after and drowned it out. Opened after being shut in for a while, it blew dry gas, but the water, about 2,000 bbls., broke in again and it is now shut in. It is the third gas well in Mississippi, the other two being in Monroe County, near Amory.

NORTH LOUISIANA

SHREVEPORT, La., Feb. 18.—The Texas Company's No. 3 Peyton, Section 31-23-11, Carterville district, Bossier Parish, was bailed in Sunday and made 705 bbls. the first 17 hours from 11 feet of sand at 3,137-48 feet, total depth 3,150 feet.

Lide and others' No. 1 Sabine Lumber Co., Section 31-8-12, Zwolle district, Sabine Parish, completed February 13 flowing an estimated 1,000 bbls. through a leaking gate from 2,204 feet total depth, was opened wide Sunday and is flowing 1,300 bbls. with the tools in the hole. As long as it continues at this rate they will be left there.

TEXAS PANHANDLE

FORT WORTH, Tex., Feb. 18.—The Texas Pipe Line Co. has issued announcement that it will purchase half the oil produced on wells with which their lines are now connected in Gray, Carson and Hutchinson Counties, this proration going into effect February 17. The other half of oil will be run to storage.

Robinson and Devores' No. 1 Saunders, semiwildcat, NW cor., Section 40, Block 3, I.&G.N. Survey, Gray County, is producing from total depth of 3,075 feet, was shot with 380 quarts at 2,990-3,050 feet and flowed 820 bbls. first 17 hours. Prairie Pipe Line is running only 100 bbls. daily from well. Storage is being erected.

GULF COAST

HOUSTON, Tex., Feb. 18.—Flush production at Port Barre, St. Landry Parish, Louisiana, was boosted an estimated 3,800 bbls. daily Monday with the completion of two good wells, one by The Texas Company and the other by the Gulf Production Co. The former's No. 4 Botney Bay set screen at a total depth of 3,426 feet and came in flowing 1,500 bbls. of pipe line oil daily. Gulf's No. 1 Ovide Lahaye is estimated good for 2,300 bbls. at 3,378 feet. There now are five producers in this field which was opened during 1929.

At Barbers Hill, Chambers County, Yount Lee Oil Co.'s No. 2 Phillips, on the southeast side of the dome, came in Monday flowing an estimated 900 bbls. at 5,228 feet. Two new wells were added at Sheeks or Esperson Dome of western Liberty County in Cranfill-Reynolds Oil Co.'s Nos. 4 and 6 Esperson. The former came in flowing 470 bbls. of fluid, 35 per cent water, from sand at 3,319-34 feet, and the latter is flowing 75 per cent fluid of which a part is water, from a total depth of 2,320 feet.

KANSAS

Gypsy Oil Co.'s No. 1, SW cor., Section 3-21-3w, in the Voshell Pool, in McPherson County, Kansas, was making 8,000,000 feet of gas from 3,070-75 feet and was drilling deeper at 3,150 feet.

The Texas Company's No. 1 Stuckey, NW cor. SW SW, Section 10-21-3w, on the east edge of the Voshell Pool, had top of the Viola lime at 3,359 feet and was landing the 6-inch casing before drilling deeper.

Kingwood Oil Co. and others' No. 1 Stayton, C NE, Section 18-31-2w, a wildcat in Sumner County, had the Wilcox sand at 4,285-98 feet with nothing showing. The test drilled into the Wilcox sand with a hole full of water. The 6-inch casing was set at 3,850 feet.

Derby Oil & Refining Corp.'s No. 1 Beevers, NW cor. SW SE, Section 25-24-12, a wildcat in eastern Greenwood County, made 41 bbls. on the swab, February 18.

The Shell Petroleum Corp.'s No. 1 Southwestern College, SW cor. SE SW, Section 2-27-1w, Sedgwick County, had the top of Viola at 3,391-92 feet with 500 feet of oil in the hole. The test is landing casing at the top of the Viola to drill deeper.

OKLAHOMA

The production of the Oklahoma City Pool was 132,029 bbls. from 28 wells, on the gauge of February 18.

Two new wells were completed in the Oklahoma City Pool Tuesday, February 18. Indian Territory Illuminating Oil Co.'s No. 1 L. Trosper, in Section 12-11-3w, made 3,744 bbls. in 21 hours, and 7,000,000 feet of gas. The well is producing from the Simpson sand at 6,154-6,377 feet. The other well completed was the Wirt Franklin Petroleum Corp.'s

(Continued on Page 160)

THE OIL MAN'S CALENDAR

February 19-21 — Columbus, Ohio, Ohio Petroleum Marketers Association, Deshler-Warwick Hotel.

February 21—New York, meeting, A.P.I. Statistical Advisory Committee, A.P.I. headquarters.

February 26-27—Springfield, Ill., meeting, Illinois Petroleum Marketers, Pere Marquette Hotel.

February 27—New York, 14th annual banquet, Oil Trades Association of New York, Roosevelt Hotel.

March 6—Los Angeles, Calif., annual meeting, California Oil and Gas Association.

March 10-12—Shreveport, La., convention, Western Petroleum Refiners Association.

March 11-12—Philadelphia, semiannual convention, Pennsylvania Independent Oil Men's Association, Elks Hotel.

March 12-14—Enid, Okla., Farm Machinery and Tractor Show.

March 13-26—Los Angeles Oil Equipment and Engineering Exposition, Shrine Auditorium.

March 17-18—Chicago, spring meeting, Independent Oil Men of America.

March 19-21—Detroit, convention, Michigan Oil Men's Association, Statler Hotel.

March 20-22—New Orleans, La., American Association of Petroleum Geologists, Roosevelt Hotel.

April 5-9—New York and Washington, 50th anniversary celebration, American Society of Mechanical Engineers.

April 5-13—Detroit, All American Aircraft Show.

April 7—Pittsburgh, Pa., meeting and election, Eastern District, Division of Production, American Petroleum Institute, William Penn Hotel.

April 7-11—Atlanta, Ga., 79th meeting, American Chemical Society.

April 7-12—Chicago, annual meeting, American Oil Burner Association, Stevens Hotel.

April 15-17—Norman, Okla., Gas Measurement Short Course, University of Oklahoma College of Engineering.

April 24-25—Cleveland, Ohio, semiannual meeting, National Petroleum Association.

May 5-8—New Orleans, Western Natural Gas Convention.

High Spots in Field News

EAST CENTRAL TEXAS
Seven new locations in Van Pool.

ROCKY MOUNTAINS
Lea Pool, New Mexico, extended south. Little Buffalo Basin, Wyoming well.

SOUTHWEST TEXAS
Offsets to No. 1 Appling, Darst Creek, being watched. Possibility of crevice conditions.

NORTH LOUISIANA
Zwolle district has three wells and Carterville two that are holding interest. Blowout in Richland Parish.

CALIFORNIA
Flow tests show Santa Fe Springs overrated. State has passed maximum production outside of Kettleman Hills.

WEST TEXAS
Ector County has 17 operations and five producers pinched in for lack of outlet. Possibility of proration if locations are made on west.
Andrews and Gaines Counties are offering possibilities.

NORTH TEXAS AND PANHANDLE
Carson County wildcat west, of White Deer, flows 1,256 bbls. with 30 pounds rock pressure in 21 hours.
Cooke County has two semiwildcat producers.
Deep producer in Jack County.

KANSAS
Gypsy Oil Co.'s well, Voshell Pool, making 8,000,000 feet of gas and drilling deeper at 3,150 feet.
Derby company's wildcat in eastern Greenwood County made 41 bbls. on swab.
Deep sand producer in Raymond district, Rice County, estimated 500 bbls.

GULF COAST
Two good wells at Port Barre, St. Landry Parish, Louisiana, added estimated 3,800 bbls.
Two new wells were added at Sheeks or Esperson Dome, western Liberty County.
Deep test on Allen Dome encouraging. Third producing horizon at Refugio.

OKLAHOMA
Production in Oklahoma City Pool was 132,029 bbls. from 28 wells, February 18.
Two new wells in Oklahoma City Pool. I.T.I.O. Co.'s No. 1 L. Trosper made 3,744 bbls. in 21 hours and Wirt Franklin Corp.'s No. 4 Lowery made 5,203 bbls. in 15 hours.
In Konawa Pool Champlin company's well flowed 1,687 bbls. and Gypsy company's well swabbed 333 bbls.

SCHURR POOL, KANSAS, UNDER CURTAILMENT

A meeting of operators of the Schurr Pool in Rice County, Kansas, was held in Wichita February 17 to determine the curtailment of production and operations in that area. It was agreed to pinch in the present producing wells in Section 21-20-10w, Rice County, to 50 bbls. a day until April 1, after which a production test is to be worked out by the operators' committee. No new wells will be started in Section 21-20-10w except Allison & Fitzwilliams Petroleum Corp.'s No. 1 Metzger, SW cor. SE NE Section 21-20-10w. After its completion and a 72-hour production test is made it is to be shut in. Offsets to the well are to be allowed the same length of time for drilling as it took to complete this well before Allison & Fitzwillians Petroleum Corp.'s No. 1 will be allowed to open their well. A tentative committee of three was appointed to work out the area to be included in the proration plans and to act as an operating committee until a general meeting of all operators in the area is held Friday, February 21. This agreement and committee is subject to adoption at the general meeting.

KETTLEMAN SUIT POSTPONED

LOS ANGELES, Calif., Feb. 15.—The State's suit to enforce the gas conservation law in Kettleman Hills called in the Kings County Superior Court, Judge Lamberson of Visalia presiding, went over to April 1. The proceedings lasted only 45 minutes. There was no attempt by the State to question the postponement, for the law so provides, but there was a strong objection to the 60 days asked, and Judge Lamberson compromised by allowing seven weeks. The State wanted the hearing set for February 24.

NEW PRESIDENT FOR CLARKE CO.

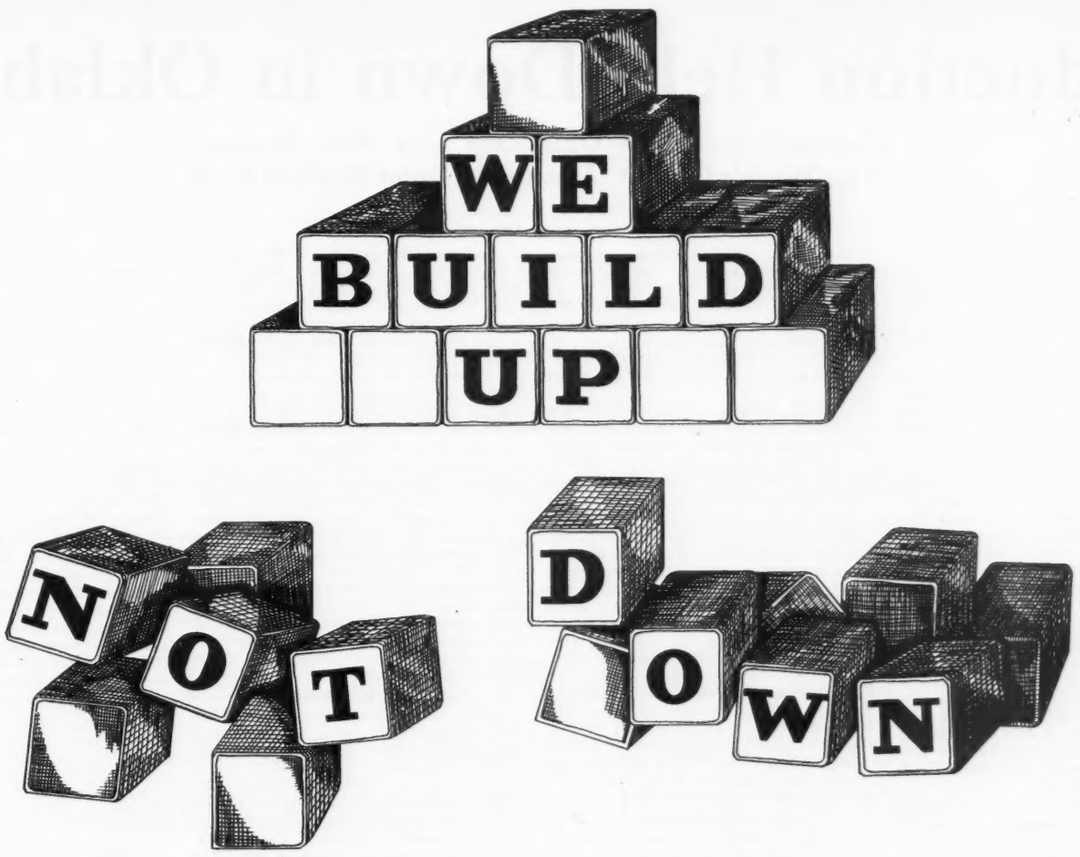
CHICAGO, Feb. 15.—H. L. Robinson has been elected president of the Fred G. Clarke Co., succeeding Bruce Beyers who resigned recently to engage in the lubricating oil business with his own company. Mr. Robinson has been vice president of the Fred G. Clarke Co.

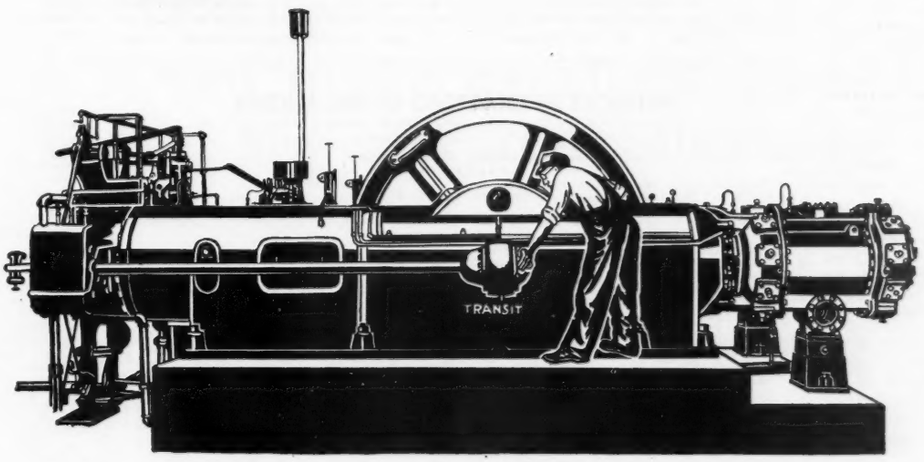
A.P.I. WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to stills, gasoline stocks and gas and fuel oil stocks—for the week ending February 15 follows:

	(1)	(2)	(3)	(4)
East Coast	100.0	3,060,700	8,195,000	6,807,000
Appalachian	91.2	600,000	1,601,000	665,000
Indiana, Illinois, Kentucky	98.6	2,262,200	7,325,000	2,998,000
Oklahoma, Kansas, Missouri	89.1	1,928,500	4,552,000	2,990,000
Texas	90.3	3,892,400	7,610,000	12,308,000
Louisiana and Arkansas	96.8	1,301,500	2,623,000	2,352,000
Rocky Mountain	92.7	403,000	2,757,000	1,033,000
California	99.3	3,959,400	16,011,000	109,640,000
Total United States	95.4	17,407,700	50,674,000	138,793,000
Texas Gulf Coast	99.4	2,996,500	6,564,000	9,670,000
Louisiana Gulf Coast	100.0	879,800	2,277,000	1,576,000

(1) Per cent refinery capacity represented. (2) Crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.





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CLEVELAND HOUSTON TULSA LOS ANGELES

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Salt Lake City, Utah.

REEVES & SKINNER MACHINERY CO.
St. Louis, Mo.

Production Held Down in Oklahoma

Potential Gauge at Oklahoma City May Increase This Week's Output. Unusually Quiet Week in Field

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

Oklahoma produced an average of 631,000 bbls. in round numbers in the week ending Saturday, February 15, an increase of 1,000 bbls. a day over the previous week.

Production of the Oklahoma City Field was 133,407 bbls. on the gauge of February 15, which is within a few barrels of the peak for that pool. The average daily production for the Oklahoma City Pool was 86,730 bbls. for the week ending Saturday, February 15.

Another showing of oil was found in the wildcat test of the Sinclair Oil & Gas Co. in Harper County, in the northwestern part of the State.

Indian Territory Illuminating Oil Co.'s No. 4 A. Bodine, NE cor. NW SE Section 24-11-3w, was completed the last of the week when it blew in making 1,140 bbls. the first three hours, and after showing a little water was shut in. Same company's No. 1 Johnson, NE cor. NW Section 25-11-3w, increased its production on the gauge of February 14, when it made 4,804 bbls.

The northwestern part of Oklahoma County has become attractive to the oil operator. Lease buying has been stimulated during the last week and large blocks are being assembled. The area west of Edmond is receiving most of the play, in Townships 14-4w, 13-4w, 13-3w, 14-3w. Ramsey Petroleum Corp. has assembled a large block of acreage in this vicinity. A wildcat test may be started on the acreage in the near future. The location may be near the dry hole completed some time ago by the Cromwell Oil Co. and Wirt Franklin Petroleum Corp., which was drilled to a depth of 4,750 feet.

Testing West Side

Gypsy Oil Co., on the west side of the county, has started core drilling its block in Township 13-4w. This activity is not expected to lead to the drilling of a deep well for some time as the leases are of a long duration. A test was drilled in that township, in Section 24-13-4w, in 1917, but it was a shallow well. The Gypsy Oil Co.'s block is north of the J. F. Cuniff test in Section 17-12-4w.

Several wildcats in the north end of the pool were coring showings of oil. Wirt Franklin Petroleum Corp.'s No. 1 Eacock, NE cor. Section 11-11-3w, cored a showing of oil at 6,233 feet in shale and was drilling deeper. Same company's No. 6 Lowery, in Section 12-11-3w, has a showing of oil at 6,244 feet. Indian Territory Illuminating Oil Co.'s No. 1 Jones Community, SW cor. Section 1-11-3w, cored an oil sand with a showing of oil at a total depth of 6,340 feet. Skelly Oil Co.'s No. 1 Dunn, in Section 1-11-3w, found a showing of gas at 3,485-3,500 feet, and was drilling deeper at 3,585 feet.

Tom Slick Oil Co.'s No. 1 Martin, in NW cor. Section 13-13-1w, a wildcat near Jones, which tested water in the deep formation and later drilled to a total depth of 6,971 feet, and then recemented, is expected to resume operations some time during the week.

Ryan Consolidated Petroleum Corp.'s No. 1 Lawton, NE cor. NW Section 3-11-2w, a wildcat in the northeast part of the field, was drilling at 4,640 feet in shale, with nothing showing.

During the week Cromwell and others' No. 2 Trosper Park, SE cor. SW NW, Section 12-11-3w, was bailed in making 803 bbls. the first hour. The production was coming from a sand at a total depth of 6,402 feet. The gas volume was estimated at 20,000,000 feet. The well made 14,661 bbls. the first 21 hours.

Coline Oil Co.'s No. 8 Olds, C NW, Section 24-11-3w, which was drilled for a gas well was bailed down during the week at a total depth of 4,973 feet. It encountered salt water and will be drilled deeper.

Magnolia Petroleum Co. and Ramsey Petroleum Co.'s No. 1 Johnson, NE cor. SW, Section 35-13-3w, a wildcat east of the pool, was drilling ahead at 4,410 feet. The test has drilled the cement plug with nothing showing.

Magnolia Petroleum Co.'s No. 1 Noble, NW cor. SW SW, Section 30-12-2w, another wildcat test east of the pool, was plugging back to test a gas showing at 6,350 feet. The total depth of test was 7,173 feet. After bailing, the crew found only salt water and a trace of gas. Prospects for production in the test were slight and some predicted it may be abandoned.

Wirt Franklin Petroleum Co.'s No. 5 Lowery, NW cor., Section 12-11-3w, was bailed down and blew in making 75,000,000 feet of gas. The test reached a total depth of 6,234 feet where the gas was encountered. The test is expected to be drilled deeper to the oil horizon.

A Town Lot Test

Another location was made on the east edge of Oklahoma City in Section 2-11-3w. It is an important test and will determine the possibilities of finding oil the the city limits. Hall & Briscoe' No. 1 Lindsay, SE cor. SW NW, Section 2-11-3w, was the location. Mid-Kansas Oil & Gas Co.'s No. 2 Browning, SW cor. NW NW, Section 18-11-2w, was another location announced during the week. It is the first location south of the Indian Territory Illuminating Oil Co.'s No. 1 P. Trosper in the same section.

The old discovery well in Oklahoma County was put on production during the week. It was the Cromwell Oil Co. and Wirt Franklin Petroleum Corp.'s No. 1 Edwards, NE cor. SW SE, Section 10-12-3w, north of the State Capitol. The well is averaging 15 bbls. a day. The oil will be used for fuel to drill the same companies' No. 2 Thompson, SW cor. NE, Section 15-21-3w, which is rigging up. The discovery well was completed in December, 1927, and at one time made 400 bbls. a day. It was drilled deeper and encountered water. It was found impossible to shut off the water successfully which prevented restoration of the initial production.

Noble County Wildcats

The producing wildcats in Noble County were still being pinched until adequate pipe line connection has been made. Magnolia Petroleum Co.'s No. 2 Young, NE cor. NW NW Section 22-21-2w, Noble County, is pinched to 900 bbls. a day, with a 400-pound back pressure. Production is coming from an unidentified horizon at 5,000-05 feet. The well has made approximately 35,000 bbls. of pipe line oil since January 6. The present pipe line facilities are unable to handle the oil and a larger line is under construction. Same firm is building the rig for the north offset, its No. 1 Sams, SE cor. SW SW Section 15-22-2w.

Indian Territory Illuminating Oil Co.'s No. 1 Albers, NW cor. Section 3-20-1w, Noble County, was abandoned at 3,519 feet, in shale.

Peerless Oil Producing Co.'s No. 1 Wentz, NW cor. SW Section 22-22-1, Noble County, was preparing to run tubing and packer, as soon as a pipe line connection has been made at the well. It has been shut down for about a week, when opened the last time it made 105 bbls. in 30 minutes. Production was estimated at 300 bbls. a day.

Shut-In Production

The initial production of the shut-in wells in the Oklahoma City Pool that have been allowed to produce for 24 hours or less was 365,821 bbls. Some new wells were added to the list during the week. The initial production of each well and the approximate dates each well will be opened follow:

Company and lease—	Well No.	Bbls.	Date
I.T.I.O.:			
L. Canfield	1	16,948	2-18-30
Coline:			
Warren	1	24,746	2-23-30
Cromwell:			
Trosper Park	11	7,353	*2-24-30
I.T.I.O.:			
Jennings	1	23,285	2-24-30
Jennings	2	20,000	3- 6-30
Prairie:			
Hiddleston	5	9,185	†3-14-30
Shell:			
Petty	6	3,444	3- 1-30
I.T.I.O.:			
Jennings	3	18,307	3- 1-30
Peterson	1	1,025	3- 7-30
N. Emerson	2	2,750	3- 3-30
Wheeler	2	22,846	3-10-30
Sinclair:			
Stamper	4	690	3-11-30
I.T.I.O.:			
Mackey	1	97	3-15-30
Coline:			
Clauer	3	4,609	3-21-30
I.T.I.O.:			
Fortson-Farley	1	8,995	3-22-30
Canfield-Button	1	15,675	4- 1-30
Shell:			
Petty	7	1,197	4- 1-30
I.T.I.O.:			
L. Farley	1	30,438	4- 1-30
Drake	2	8,780	4- 3-30
Watters	3	1,000	4- 3-30
G. Button	3	11,118	4- 5-30
A. Bodine	5	13,520	‡4- 8-30
Wikle Anderson	2	8,390	4- 7-30
Trosper	8	3,594	4- 7-30
Trosper	10	16,136	4-10-30
Farley-Fuzzell	1	79	§4-14-30
Bodine	3	8,442	4-13-30
Button	4	6,996	4-13-30
Trosper	9	3,538	4-13-30
A. Brokaw	2	4,599	4-15-30
Franklin:			
Lowery	3	11,908	4-17-30
I.T.I.O.:			
Trosper	6	1,510	*4-17-30
Fortson	3	17,081	‡4-20-30
Coline:			
Warren	5	5,325	4-20-30
Cromwell:			
Trosper Park	2	16,225	4-19-30
Trosper Park	9	10,219	‖4-17-30
I.T.I.O.:			
Drake	1	4,631	4-18-30
A. Bodine	4	4,140	¶4-19-30
Total	38	365,821	

*18 hours; †19 hours; ‡15 hours; §3 minutes; ‖22 hours; ¶3 hours.

Earlsboro District

The new wells south of the old Earlsboro Pool, in Seminole County, have been prorated the same as those in the Earlsboro Pool. Amerada Petroleum Corp. and Dixie Oil Co.'s No. 1 Grounds, in Section 22-9-5, made 3,885 bbls. in 14 hours, from the Wilcox sand at 4,188-4,214 feet after a shot. The well is now shut in for 10 days and will be curtailed 30 per cent of its potential when opened for production. The Magnolia Petroleum Co.'s No. 1 Grounds, in Section 23-9-5, is producing at the rate of 100 bbls. a day. The owners expect to produce the

(Continued on Page 78)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Bros.' No. 1 Forbes, SE cor. NW NW, Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Rigging up standard tools 4,660 ft.

BECKHAM COUNTY

Kay and others' No. 1 Martin, C E half E half NW Sec. 32-8-24w	Drlg. 2,510 ft.
Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW Sec. 17-9-22w	Shut down 2,402 ft.
Carson and others' No. 1 Danby, SW cor. SE NE Sec. 20-8-22w	Shut down 1,575 ft.

BLAINE COUNTY

Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w	Spudded and shut down.
Washoma Oil Co. and others' No. 1 Phillips, C NW SW Sec. 12-19-10w	Shut down 2,935 ft.

CADDO COUNTY

Abernathy & Brown's No. 1 Horton, SE cor. Sec. 8-6-13w	Shut down 525 ft.
W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w	Shut down 3,394 ft.

CLEVELAND COUNTY

Harris et al's No. 1 Highbee, SE NW Sec. 20-6-1	Shut down 540 ft.
Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w	Shut down 3,120 ft.
Phillips Pet. and T. B. Slick's No. 1 Sudick, NE cor. NE Sec. 8-10-2w	Wilcox 7,716-20 ft.; water; shut down.

COAL COUNTY

W. E. McGraw's No. 1 King, C SW NE Sec. 11-1-8e	Shut down 1,235 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 150 ft.
Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w	Shut down 4,055 ft.

GARFIELD COUNTY

Shell Petroleum Corp.'s No. 1 Loomis, C NW NW Sec. 32-23-4w	Shut down 200 ft.
Continental and Barnsdall's No. 1 Brown, CNL SW Sec. 10-20-4w	Drlg. plugs 4,725 ft.
E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w	Shut down 5,566 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w	Spudded and shut down.
J. M. Henry and others' No. 1 Abraham, SE cor. NW Sec. 4-5-8w	Rig.

GRANT COUNTY

Gypsy Oil Co.'s No. 1 Belderbeck, C SE SE Sec. 27-28-7w	Wilcox 5,647 ft.; drlg. 5,659 ft.; water.
Bailey's No. 1 Stover, C SW SE Sec. 20-27-5w	Rig on ground; abandoned
Baucher et al's No. 1 Deadman, SW SE Sec. 12-28-4w	Shut down 4,737 ft.
Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-25-4w	Shut down 5,640 ft.
Otstot's No. 1 Tabor, C NE NE SE Sec. 23-26-3w	Drlg. 3,370 ft.

GARVIN COUNTY

Nelson et al's No. 1 Strickland, NE SW Sec. 10-4-3	Shut down 109 ft.
Pickham-Harris' No. 1 Community Gaines, C NW NE Sec. 11-4-1	Drlg. 200 ft.

GREER COUNTY

Helmerich & Payne's No. 1 Henck, NW cor. Sec. 23-6-24w.	Fishing 2,205 ft.
I. T. I. O. and others' No. 1 fee, C SW NE Sec. 17-6-24w	Shut down 2,100 ft.

(Continued on Page 175)

Changes come fast in the oil refining business, but the Dubbs Cracking Process can meet them all

The Dubbs Process is adaptable to any charging stock, from the lightest distillate to the heaviest crude or residue

It can make excellent gasoline, at low cost, from otherwise waste products

Installation of Dubbs cracking units often marks the beginning of profitable operation

It has for many refiners

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Rice County Excites New Interest

Deep Sand Producer in Raymond District Estimated at 500 Bbls. Potential Gauges Taken in Voshell Pool

By W. A. Spinney
Staff Correspondent, Kansas Fields

Potential production gauges were obtained Saturday and Sunday, February 15 and 16, in the Voshell Pool, in McPherson County. The pool was divided into two groups of "A" and "B" wells. The class "A" wells were opened Saturday and the class "B" wells Sunday. The potentials will be the basis for the next 15 days' production, when the pool will be allowed to produce one-fourth of its potential production.

The potential production of the wells was 12,201 bbls. from seven wells. The gauges were as follows: Derby Oil & Refining Corp.'s No. 1 Stuckey, Section 9-21-3w, 2,181 bbls.; Empire Oil & Refining Co.'s No. 1 Voshell, 1,550 bbls.; same firm's No. 2 Voshell, 1,920 bbls.; McBride's No. 2 Voshell, 1,728 bbls.; Mid-Kansas Oil & Gas Co.'s No. 1 Voshell, 1,702 bbls.; Prairie Oil & Gas Co. and Slick, Pryor & Lockhart's No. 1 Stuckey, 1,690 bbls.; and Sinclair Oil & Gas Co.'s No. 2, 1,500 bbls.

A situation similar to the Voshell Pool is threatened in the new pool near Raymond, in Rice County. A meeting of operators was called with the view of curtailing the development in that area. It is believed the companies owning the present producing wells will be asked to pinch them. Several companies are planning to start new tests in the vicinity, among them being The Texas Company, a quarter mile from the Producers & Refiners Corp.'s new well and the Allison-Fitzwilliam Petroleum Corp.

Rice County Extends Interest

The new deep sand producer in the Raymond district in Rice County, is attracting considerable interest. The district was first brought to the attention of oil operators last summer when the discovery well was completed. This was Steinbuchel & Hilligoss' No. 1 Schurr, NE cor. SW, Section 21-20-10w, near Raymond. The well yielded 54 gravity oil at a total depth of 3,289 feet. The initial production was better than 100 bbls. a day. The new well and acreage near the well were purchased by Slick, Pryor & Lockhart, a short time after it was completed. The well has been pumping about 55 bbls. a day of the highest gravity oil in the State.

The three offsets were started, Producers & Refiners Corp.'s No. 1 Thompson, SE cor. NW, Section 21-20-10w; Independent Oil & Gas Co.'s No. 1 Mezger, SW cor. NE, Section 21-20-10w, and Vickers Petroleum Corp.'s No. 1 Binger, NW cor. SE, Section 21-20-10w. The Producers & Refiners Corp.'s No. 1 Thompson, only found a showing of oil in the same formation the discovery well is producing from. The Independent Oil & Gas Co. test also found a showing in the same formation. The area at that time looked like a one-well pool, until the Producers & Refiners Corp. drilled deeper and found Silicious lime, with oil at 3,330 feet. The well swabbed 500 bbls. of oil the first 25 hours.

The Producers & Refiners Corp.'s No. 1 Thompson, in Section 21-20-10w, swabbed 345 bbls. in 24 hours; however, engine trouble interfered with the swabbing and it is estimated the well may be a 500-bbl. producer. Vickers Petroleum Corp.'s No. 1 Binger, in Section 21-20-10w, had a showing of oil at 2,570 feet in a stray sand. The test was landing 8-inch casing at 2,590 feet. New locations were expected to be announced by The Texas Company on its lease in the same section adjoining the Producers & Refiners Corp. and by Allison & Fitzwilliam Petroleum Corp. on its lease a quarter mile east of the Independent Oil & Gas Co.'s well.

Voshell Pool's Eighth Well

Sinclair Oil & Gas Co. added the eighth well to the new Voshell Pool in McPherson County. Its No. 1 Voshell, SW cor. NW NW, Section 10-21-3w, was mudding off gas at a total depth of 3,335 feet. The Empire Oil & Refining Co.'s No. 2 Voshell, SE cor. NE, Section 9-21-3w, swabbed 1,822 bbls. the first 22 hours, the next 15 hours the well made 1,542 bbls. It is estimated to be an 1,800-bbl. well. The Texas Company's No. 1 Stuckey, NW cor. SW SW, Section 10-21-3w, McPherson County, was expected to be drilled into the pay horizon in a few days. The test was drilling at 3,266 feet on Friday, February 14.

The Derby Oil & Refining Corp. is planning to install an electric submarine pump which was described in The Oil and Gas Journal in the issue of January 9, in the Voshell Pool, in McPherson County. The pump will be installed in the discovery Wilcox sand well in NE cor. SE, Section 9-21-3w. The Derby corporation expects to reduce the lifting costs by the use of this pump. The new potential gauge for the well will be taken through the use of this pump, which has demonstrated its ability to handle a large volume of fluid. The pump was used by the Continental Oil Co. in its Goodrich well in the Goodrich Pool last summer, with satisfactory results.

McPherson County had 31 drilling tests at the beginning of this week which is more than double the number of any other county in the State. The drilling tests were mostly in the Voshell Pool, 26 of these tests being in the Voshell Pool.

Oil was found on the Wyandotte County poor farm, in Wyandotte County. A water well was being drilled when oil was found at 410 feet. It was estimated the well would make 10 bbls. a day. The county commissioners were to decide whether to produce the oil or drill the test deeper in search of water.

The Shell Petroleum Corp. completed its No. 1 Miller in the Ritz Pool in McPherson County, three months ago with an initial production of better than 3,000 bbls. a day, from the chat horizon. The test is now pumping 40 bbls. a day. It is located in the SW cor. SE, Section 1-20-2w. It is also making considerable water.

Greenwood County

The discovery of two new pools in the eastern part of Greenwood County has attracted the attention of oil operators to that part of the county. Prairie Oil & Gas Co. and others' No. 1 Moran, in Section 16-24-12, filled up 500 feet with oil from the Bartlesville sand at 1,578-1,603 feet. The test was shot with 80 quarts and was cleaning out. It was estimated to be a 75-bbl. well. The new well either opens a new pool or is an extension on the southeast to the Patterson Pool.

The Derby Oil & Refining Corp.'s No. 1 Beevers, NW cor. SW SE, Section 25-24-12, a wildcat in the eastern part of Greenwood County, swabbed 100 bbls. in 22 hours from the Bartlesville sand at 1,618-57 feet. The new well is expected to be put on the pump in a few days. The test is considered important as it is about 2½ miles southeast of the Prairie Oil & Gas Co.'s new well in Section 16-24-12, a Bartlesville sand well which is pumping around 75 bbls. a day. Some have expressed the opinion the new well of the Derby Oil & Refining Corp. is in the same trend as the Prairie Oil & Gas Co.'s well. The development will extend the production in the Patterson Pool trend.

Sedgwick County

The northern extension to the Valley Center Pool, in Sedgwick County, is not proving productive. Several dry holes were completed in the area in the last month. Slick, Pryor & Lockhart and others' No. 5 Smyser, SW cor. SE, Section 36-25-1w, has a hole full of water at 3,418 feet. It is the fourth dry hole completed on the lease.

The deepest test completed in Sedgwick County was a failure. Continental Oil Co.'s No. 1 Sensorth, NW cor., Section 25-28-4w, was abandoned at 4,300 feet.

In the new pool west of Wichita, Shell Petroleum Corp.'s No. 1 Southwestern College, SW cor. SE SW, Section 2-27-1w, was underreaming casing at 3,208 feet, near the top of the pay formation. The test is the east offset to the discovery well which is pumping 155 bbls. a day from the Simpson dolomite.

Continental Oil Co. may drill three tests in the vicinity of the George Dickey and others' No. 2 Kratz, SW cor. W half NW, Section 26-34-2, southwest of the Geuda Springs area in Sumner County. The well was completed as a 7,000,000-foot gas well at 1,570-74 feet. The well is expected to be more profitable than small oil wells in the chat horizon which have been completed in the area.

Wentz Oil Corp. is coring in Township 31-3w, Sumner County, on a block of 4,500 acres, and if a favorable structure is located will drill a wildcat test. Carter Oil Co. formerly had the block and drilled a 4,550-foot test in the SW, Section 8-31-3w, which was found dry and later abandoned.

Kingwood Oil Co. and others' No. 1 Stayton, C NE, Section 18-31-2w, northwest of Wellington, was drilled deeper at 4,100 feet.

Aladdin Petroleum Co. and others' No. 2 Elinger, NE cor. SW NE, Section 24-27-3, Butler County, west of Augusta, was drilling deeper. It had only a showing of oil in the Wilcox sand and is two locations north of the discovery well in the district. Near the Young Pool, Aladdin Petroleum Corp.'s No. 1, NW NE cor. SE, Section 20-26-7, was drilling deeper at 3,120 feet. The test had a showing of oil in the top of the Mississippi lime and in the Leon lime. Shell Petroleum Corp.'s No. 1 Harper, in Section 35-26-3, a wildcat in Butler County, was drilling at 2,945 feet. The test is expected to be drilled to the Wilcox sand.

Skelly Oil Co. and others' No. 1 Leedy, SW cor. SE, Section 22-25-9, in southeastern Chase County, was shot with 100 quarts at 2,571-78 feet. The oil rose 1,400 feet in the hole.

Day and others found a showing of oil in the wildcat test in Trego County. The showing of oil was in the No. 1 Eaton, NE cor. NW SW, Section 2-11-21w, at 3,470-75 feet. Water was later encountered at 3,489 feet. The test is underreaming 6-inch to a total depth of 3,500 feet.

Butler County

Ramsey and others' rig is up for No. 1 Wilkinson, SE cor. NW, Section 25-24-3. Empire Oil & Refining Co. has built the rig for No. 7 Brandenburger "A," SE cor. NE, Section 22-27-5. No. 1 Semisch, NE cor. SE SW, Section 33-27-7 is a rig. Johnson and others have built the rig for No. 1 Slabaugh, NE cor. SW, Section 10-28-6. Nathan and others made location for No. 1 Hamilton, NE cor. NW NW, Section 14-28-6.

Coffey County

Ellis and others' No. 1 Sheldon, SE cor. NE, Section 27-22-14, has been abandoned at 1,663 feet. Ritchey & Moore's

(Continued on Page 144)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

BARBER COUNTY

Company, farm and location—	Remarks:
Skelly Oil Co.'s No. 1 Temple Ranch, Sec. 13-34-15w	Shut down 4,702 ft.
Robertson et al's No. 1 Powell, SE cor. SE Sec. 11-32-10w	Shut down 3,955 ft.

BARTON COUNTY

Prairie's No. 1 Davidson, NW SE Sec. 4-16-11w	Drlg. 1,315 ft.
Slick et al's No. 1 Sweeney, SW NE Sec. 23-17-11w	Drlg. 3,430 ft.
Everett & Wiley's No. 1 Ward, NW cor. SW Sec. 12-20-13w	Abandoned 3,948 ft.

BUTLER COUNTY

Shell Petroleum Corp.'s No. 1 Harper, SW NE Sec. 35-26-3	Drlg. 2,567 ft.
Martin et al's No. 1 Flanigan, C SW SE SW Sec. 29-27-3.	Shut down 1,930 ft.

CHASE COUNTY

Urschell et al's No. 1 Lipps, C SW SW Sec. 27-18-6	Drlg. 250 ft.
Steinbuckel et al's No. 1 Stephenson, NE SW Sec. 4-20-6	Shut down 500 ft.
Steinbuckel et al's No. 1 Cook, SE cor. Sec. 21-19-8	Shut down 900 ft.
E. W. Marland, Inc.'s No. 1 Altemus, SE NE Sec. 33-18-6	Skid rig; drlg. 650 ft.

CLAY COUNTY

Chrisler et al's No. 1 Tivier, SW cor. Sec. 19-8-3	Shut down 50 ft.

CHAUTAUQUA COUNTY

Valentine Oil Co.'s No. 1 Purcell, NW SE SW Sec. 2-33-9	Abandoned 100 ft.

COWLEY COUNTY

Prairie O. & G. Co.'s No. 1 Dosbaugh, SE cor. Lot 27, Sec. 18-32-8	Rig.
Edenfield & Fair's No. 1 Wallace, CWL NE Sec. 17-34-4.	Shut down 365-75 ft.; 2,000,000 ft. gas.
Fine et al's No. 1 Brown, SE cor. Sec. 8-32-4	Drlg. 2,377 ft.
Milton & Mead's No. 1 Tatum, SE cor. SW Sec. 11-31-6.	Shut down 1,920 ft.

DICKINSON COUNTY

Cress' No. 1 Sanden, NE cor. Sec. 12-15-2	Rig.
Prairie's No. 1 Lachard, C NW SW NE Sec. 12-16-2	Drlg. 2,360 ft.
Hiatt & Durham's No. 1 Wendt, NW cor. Sec. 17-16-2	Spudding.
Kruger et al's No. 1 Diche, C NW NE NE Sec. 17-13-4	Shut down 2,390-2,400 ft.; water.
E. N. Morgan's No. 1 Whithair, NW SE Sec. 9-12-1	Shut down 150 ft.

DOUGLAS COUNTY

Steinbuckel's No. 1 Unknown, SW NE NW Sec. 34-14-21.	Rig.
Jenkins & Scott's No. 1 Haden, SE NW Sec. 10-12-17	Shut down 550 ft.

EDWARDS COUNTY

Skelly's No. 1 Johnson, NE SW Sec. 21-26-17w	Drlg. 3,865 ft.
Barnsdall Oil's No. 1 McCarty, NW NE Sec. 31-25-17w.	Drlg. 3,640 ft.
Dixie & Amerada's No. 1 McCarty, SW cor. Sec. 22-25-17w	Drlg. 3,827 ft.

ELK COUNTY

H. F. Fleming's No. 1 Shered, NW cor. Sec. 16-29-9	Shut down 50 ft.
Empire and Arkansas Fuel's No. 1 Record, C NW NE SE Sec. 32-30-10	Drlg. 2,350 ft.

Zwolle Townsite Well Week's Feature

Three Wells in That District and Two in Carterville Hold Interest in the Two Areas. Richland Parish Blowout

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Feb. 17.—Developments in Carterville and Zwolle districts of Bossier and Sabine Parishes followed one on the heels of the other this week making the period the liveliest Shreveport has experienced in some time, three wells in Zwolle and two in Carterville increasing the large amount of interest that has been growing in those two areas from week to week during the past three months.

Lide and others' No. 1 Sabine Lumber Co. in Section 31-8-12, 3 miles west of R. L. Gay's discovery well and on a direct line between it and his Blue Lake wells on the west end of the structure, was, perhaps the most sensational. It is a townsite well and, depending upon the attitude of Zwolle authorities and the property owners, with insurance companies possibly having something to say, may be followed by a town-lot drilling scramble. Six-inch was cemented at 2,182 feet on top of the Marlbrook marl and it was drilling at 2,197 feet when it blew in. The well, in which Lion Oil Refining Co. has a half interest, was turned into Standard Oil Co.'s line Friday and ran 1,225 bbls. with the gate closed as far as it will go and the tools still in the hole. It is estimated to be fully as good a well if not better than Gay's discovery well. Total depth is 216 feet less than the latter. H. D. Easton, geologist, who shares with Gay the discovery of the field made the location, which he described as his "pet" for the east end of the field and four days before it blew in asked the writer to check him on his prediction that it would "be either a big well or nothing at all."

The Zwolle pay, Mr. Easton says, is in a combination zone designated, as an operating term, "chalk rock." This combination includes a gray marl which is the basal marker of the Midway (Tertiary) and whatever remnants of Arkadelphia Nacatoch, Marlbrook marl, Annona chalk and Brownstown marl may be present; all being cretaceous and mostly Annona chalk. Seemingly wells can be found at any point in this combination, depending upon granular, sandy or porous conditions and therefore no well can be called a dry hole until it has drilled through this combination.

Ohio Oil Co.'s No. 1 Bowman-Hicks, Section 35-8-12, a half mile east of the discovery well, started pumping February 12 but broke down after 11 hours during which it put 72 bbls. of oil into the tank. No. 2 Bowman-Hicks, Section 33-8-12, a mile west of the discovery, is flowing by heads at the rate of 280 bbls. from 2,510 feet, the deepest in the field to date. Amerada Petroleum Corp.'s No. 1 Bowman-Hicks in Section 33-8-12, a half mile northwest of the discovery, appears to be good for just such a pumper as the Ohio's company's No. 1, standing 500 feet in oil, total depth 2,456 feet. Olsan Brothers' No. 1 Keelan, Section 27-8-12, is temporarily abandoned with 150 feet of oil in the hole, total depth 2,625 feet.

Benedum & Trees made location for two more wells, Nos. 4 and 5 Bowman-Hicks in Section 34-8-12, and are rigging up on No. 3, also in Section 34. No. 2-A Bowman-Hicks in Section 3-7-12, which was drilling when they bought Cook and Gay's 10,000-acre Loring block and the discovery well, is drilling below 2,393 feet. Paramount Oil & Gas Co. has derrick up for a wildcat in Section 11-6-12, No. 1 Woolums, 7 miles south of production. Nine other wells which have 6⅝-inch set are drilling in or arranging to test so next week should be Zwolle's own in the way of attracting interest.

Carterville Producer

The excitement in Carterville started when Muslow Oil Co.'s No. 1-B Kilgore, Section 31-23-11, blew in from 3,134 feet and made 150 bbls. the first 2 hours, settling down to an estimated 750 or 1,000-bbl. producer from 10 feet of sand. It was followed a day or two later by Louisiana Petroleum Co.'s No. 3 J. W. Peyton in Section 25-23-12, flowing an estimated 1,000 bbls. from 11 feet of sand, total depth 3,136 feet. As in the case of Zwolle, there are half a dozen wells due for testing next week or 10 days. Simon Goldman's No. 1 McFarlin, a wildcat in Section 7-19-13, 10 miles north of Shreveport, was abandoned as a salt water hole at 2,600 feet. Some time ago it was the cause of a little flurry when it made a show of oil with salt water at around 1,000 feet. E. W. Bateman's No. 2 Womble, Section 1-22-11, Sarepta district of Webster Parish, southeast of Carterville, pumped 60 bbls. from 2,712 feet.

Triangle Drilling Co.'s No. 1 Kilpatrick, Section 7-19-5, Claiborne Parish, which occupied the spotlight last week by making a show of 1,500,000 feet of gas from 4,371 feet cored anhydrite from 4,423-41 feet, the last 3 feet being porous lime with a slight show of oil, and is coring again at 4,441-54 feet in lime and shale, meanwhile making apparently twice as much gas as it did at first. Meanwhile they are rigging up for No. 1 Hardy, Section 18-19-16, on the Texas line north of the Greenwood gas district of Caddo Parish.

Mount Holly Wildcat

Little news came out of Arkansas. Anderson & Wimmer have taken over No. 1 Buck, a Mount Holly wildcat in Section 7-15-17, drilled to 2,615 feet last summer by Flaucher and others and abandoned, and are arranging for a drill stem test at 2,680-90 feet. Artex Oil Co. temporarily abandoned No. 1 Smith, Section 31-15-17, another Mount Holly wildcat, at 3,188 feet and Copenhaver and others temporarily abandoned No. 1 Warnick in Section 7-15-17 in the same area at 2,190 feet.

Daily average runs from the field for the division totaling 95,945 bbls. were 345 bbls. less than last week, all but 40 bbls. of it in Arkansas. Champagnolle was off 540 bbls. In Louisiana Caddo heavy was off 165 bbls. and Zwolle 330 bbls. Smackover heavy runs increased 235 bbls. and Caddo light 435 bbls.

NORTH LOUISIANA

Caddo, light	10,000
Caddo, heavy	2,800
Homer	3,580
Haynesville	4,580
De Soto-Red River	2,300
Elm Grove	470
Bellevue	600
Cotton Valley	2,100
Urania	5,150
Pleasant Hill	915
Sarepta	1,400
Zwolle	3,655
Total	37,550

ARKANSAS

El Dorado	4,075
Smackover, light	5,190
Smackover, heavy	41,315
Stephens	1,015
Nevada County	1,115
Lisbon	1,040
Champagnolle	4,410
Bradley	85
Mount Holly	150
Total	58,395
Both states	95,945
Last week	96,290
Decrease	345

Bossier Parish

H. S. Autrey has taken over No. 1 Smith, Section 26-19-11, Bossier Parish, drilled to 1,836 feet as a Bellevue deep test by Morgan Oil Co. and set 4½-inch with packer at 1,501 feet where Morgan had a show. Simplex Oil Co.'s No. 6 Thomas, Section 15-20-15, Pine Island, Caddo Parish, pumped 12 bbls. initial from 2,220 feet and The Texas Company abandoned No. 1 Henderson Land & Timber Co. in Section 16-19-15, a wildcat, as a dry hole at 2,761 feet. Two wells in Panola County, Texas, gas area wound up the list of completions. One was a gas well, Nemours Corp.'s No. 4 Brumble in the E. F. Mitcheson Survey, and the other a dry hole, D. Thomason, No. 4

(Continued on Page 136)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA
BOSSIER PARISH—BELLEVUE

Company, farm and location—	Remarks—
H. L. Morgan's No. 2 Wetherbee, 3,811 ft. E, 200 ft. S, NW cor., Sec. 28-19-11	Drlg. lime 3,143 ft.

BOSSIER PARISH—CARTERVILLE

Bahan & Bahan's No. 1 G. W. May, 660 ft. S, 660 ft. W, NE cor., Sec. 26-23-12	Rig up.
Bahan & Bahan's No. 1 Floyd Pleasant, 150 ft. N, 150 ft. W. C. Sec. 25-23-12	Derrick.
Del.-La. Dev. Co.'s No. 2 Bollinger, 200 ft. N, 200 ft. W, SE cor. NE NE, Sec. 31-23-11	Cmtd. short string 4½-in. 3,130 ft; drlg. plug.
Greenwood Prod. Co.'s No. 1 Bollinger, 1,980 ft. N, 1,150 ft. E, SW cor. SE, Sec. 36-23-12	O.W.D.D. 3,071 ft.
Goodman-Johnson's No. 1 Martin, 330 ft. S, 330 ft. E, NW cor. SE, Sec. 26-23-12	W.O.S.R.; T.D. 3,169 ft.
Lee Kinnebrew's No. 1 Garnett, 200 ft. S, 200 ft. W, NE cor. SW NW, Sec. 36-23-12	Location.
La. Pet. Corp.'s No. 2 J. W. Peyton, 1,170 ft. S, 150 ft. W, NE cor. SE, Sec. 25-23-12	Drlg. 2,890 ft.
La. Pet. Corp.'s No. 3 Peyton, 660 ft. S, 150 ft. W, NE cor. SE, Sec. 25-23-12	Cmtd. 6⅝-in. 3,113 ft; T.D. 3,117 ft.
Lide et als' No. 1 Farrington, 330 ft. N, 330 ft. W, SE cor. NW NW, Sec. 23-23-12	Derrick.
La. Oil Ref. Corp.'s No. 1 Matlock, 2,970 ft. S, 990 ft. E, NW cor., Sec. 26-23-12	Rig up.
Love et als' No. 1 Allen, SE cor. NE NE, Sec. 30-23-11	Derrick.
Magnolia Pet. Co.'s No. 1 M. A. Rogers, 660 ft. S, 660 ft. W, NE cor. NE SE, Sec. 21-23-12	Tested dry 3,304 ft; drlg. 3,354 ft.
Muslow Oil Co.'s No. 1 Barnett, 1,320 ft. W, 660 ft. N, SE cor., Sec. 25-23-12	Cmtd. 6-in. 3,140 ft; 3-ft. sand 3,143 ft.
Muslow Oil Co.'s No. 1-B Kilgore, 3,050 ft. N, 1,930 ft. E, SW cor., Sec. 31-23-11	Arranging to cmt. 4½-in; T.D. 3,134 ft.
Muslow Oil Co.'s No. 1 Mark Myer, 1,980 ft. N, 330 ft. W, SE cor., Sec. 36-23-12	Arranging to deepen; T.D. 3,088 ft.
Muslow Oil Co.'s No. 2 Peyton, Sec. 30-23-11	Rig up.
Northwest La. Gas Co.'s No. 5 Bollinger, 252 ft. E, 200 ft. S, NW cor. Lot 7, Sec. 31, in Sec. 38-23-11	Reported began drlg. Feb. 4 in error; rig up; T.A. Began drlg. Feb. 4.
Nat. Gas Prod. Co.'s No. 1 U. S. Govt., 660 ft. N, 660 ft. W, C, Sec. 31-23-11	W.O.S.R. 3,194 ft.

(Continued on Page 120)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

NORTH LOUISIANA
BOSSIER PARISH

Company, farm and location—	Remarks—
H. S. Autrey's No. 1 Smith, 200 ft. S, 200 ft. W, NE cor. NW NW, Sec. 26-19-11	O.W.D.D; T.D. 1,836 ft; plugged back to 1,500 ft. and cmtd. 4½-in.
Neil & Lanier's No. 1 Biedenharn, SE cor., Sec. 23-21-14	W.O.S.R; 980 ft. oil in hole; T.D. 998 ft; arranging to re-test at 998 ft.
S. P. Lanier's No. 1 Le Rosen, 300 ft. S, 1,600 ft. W, NE cor., Sec. 26-21-14	Derrick.
Walker et als' No. 1 Antrim, NW cor. SE, Sec. 28-22-13	Set liner; washing; T.D. 3,184 ft.
C. L. West et als' No. 1 Sentell & Dickson, 2,310 ft. W, 895 ft. N, SE cor., Sec. 3-20-13	S.D. 1,110 ft.

CADDO PARISH

R. W. Norton's No. 1 Hill, 630 ft. N, 1,260 ft. W, SE cor. NE, Sec. 33-23-16	D.S. test 8-ft. sand 4,479 ft; S.W; S.D. 4,496 ft.
I. N. Pharis, trustee's No. 1 Oden, NE cor. SE NE, Sec. 16-19-14	S.D. 2,322 ft; topped sand at 3,396 ft; set 6⅝-in; T.D. 2,409 ft.
C. W. Robinson's No. 1 Wilson, 990 ft. S, 330 ft. W, NE cor. SE, Sec. 2-15-16	Rig up.
Old River Oil Co.'s No. 1 Sibley, 300 ft. E, 300 ft. S, NW cor. SE, Sec. 15-19-14	W.O.S.R. 2,495 ft.
Triangle Drlg. Co.'s No. 1 Hardy et als, 660 ft. N, 660 ft. W, SE cor. fractional Sec. 18-19-16	Rigging up.

CATAHOULA PARISH

Lochnager Pet. Co.'s No. 1 Taliaferro, 572 ft. E, 396 ft. S. C. Sec. 26-9-6	S.D. 900 ft.

CLAIBORNE PARISH

El Dorado Chief Oil Co.'s No. 1 Dance, C SW NE. Sec. 27-20-7	S.D. 2,240 ft.
Leue Oil Co.'s No. 1 Taylor, Sec. 16-22-6	Derrick.
Triangle Drlg. Co.'s No. 1 Kilpatrick, 660 ft. S., 660 ft. E. NW cor. SW NE, Sec. 7-19-5	Cored lime and streaks of shale 4,389-4,407 ft; blown again made same amt. gas, estimated 778,000-1,000,000 ft.

CONCORDIA PARISH

Joe Man et als' No. 1 Maxwell, C, Sec. 35-3n-8e	Drlg. 350 ft.

DE SOTO PARISH

Benedum & Trees Oil Co.'s No. 1 Johnson, 300 ft. S, 300 ft. W, NE cor., Sec. 7-11-13	Coring 2,760 ft.
Benson Oil Co.'s No. 1 Harris, Sec. 6-10-13	Drlg. lime 3,500 ft

(Continued on Page 108)

Allen Dome's Encouraging Showing

Deep Sand Test Flowing 200 Bbls. a Day. Third Producing Horizon Found at Refugio. Good Well at Humble

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Feb. 17.—After producing steadily since October 12, the Mills Bennett Production Co.'s No. 1 Allen, at Allen Dome, Brazoria County, appeared to be a successful completion as a flowing well. If it is it will be the first well to flow longer than a few days. Only one other well, Shell Petroleum Corp.'s No. 1 Allen Bernard, the discovery well, has produced for any length of time, having been pumping almost continuously since February, 1928. However, its initial production was 29 bbls.; its present yield is only between 8 and 10 bbls. daily, and this is from a total depth of 5,337 feet.

Mills Bennett Production Co.'s well, which is 261 feet to the northeast of the Allen Bernard discovery well on the southeast side of the dome, made an initial flow of 30 bbls. an hour of pipe line oil on a three-eighths and a half-inch choke, but this flush flow settled and the well is estimated as good for approximately 200 bbls. a day, although no accurate gauge has been made. Six joints of 4½-inch screen were set in the hole at a total depth of 4,999 feet. Pressure of the well at completion was 300 pounds but this now is down to 65 pounds. The oil is higher gravity than any yet found at Allen, it being 41.3 gravity.

This is the first test drilled by Mills Bennett Production Co. at Allen. This company several months ago took over for development the holdings of the Shell Petroleum Corp., which discovered the dome by torsion balance in 1925 and which drilled eight deep tests in addition to a number of shallow tests on the cap rock area. A number of sulphur tests also have been drilled. Under terms of the development, Mills Bennett is to drill the dome for a half interest.

Oil showings have been found in nearly all the deep tests drilled at Allen. Shell's No. 1 Allen Bernard, the discovery well, which finally was completed at a total depth of 5,337 feet as a 29-bbl. pumper, tested a sand at a total depth of 5,139 feet and came in estimated at 1,500 bbls. daily on a half-inch choke, but this flush flow dropped quickly and the first day's output was only 160 bbls. The well then quit and was deepened to its final completion depth. Shell's No. 4 Allen, also on the southeast side, made a short-lived well, flowing initially at the rate of 900 bbls. daily from sand at 5,121 feet. The well first had been completed as a 60,000,000-foot gasser at 4,913 feet and for a time flowed at the rate of 500 bbls. of oil daily, but soon quit. This well was worked over several times and then abandoned. Shell's No. 1 Random, southeast side, was another teaser, finding several sands which produced some oil, none of which held up for any length of time.

List of Allen Deep Wells

The following deep wells, not in order of completion, have been drilled at Allen, their location, well number and completion record being given:

Southeast flank, No. 1 Allen Bernard, pumping 29 bbls. 5,337 feet.

Northeast flank, No. 2 Allen, abandoned in shale 4,968 feet.

Northeast flank, No. 3 Allen, abandoned in shale 5,035 feet.

Southeast flank, No. 4 Allen, abandoned at 5,184 feet. Made short-lived wells at 4,913 feet and 5,109 feet.

Northeast flank, No. 5 Allen, abandoned in salt 5,040 feet.

South flank, No. 2-A Pool, abandoned in sandy shale 5,958 feet.

Southeast flank, No. 1 Random, abandoned at 5,584 feet. Made short-lived wells at 4,942 feet, 5,035 feet and 5,220 feet.

Northwest flank, No. 3 Reece, abandoned in salt 5,121 feet.

Southeast flank, No. 1 Allen (Bennett), now flowing 4,999 feet.

As can be seen by the above list, Allen Dome has had a deep test on each side except the west and southwest. A peculiarity of this dome is the fact that on each side tested a precipitous dip is indicated in the side of the dome as shallow cap rock tests have been drilled only a short distance in from each of these deep tests. Several of these deep tests have failed to find either cap or salt, although within a couple hundred feet of tests which went into cap between 800 and 900 feet.

Interest in Refugio

The chief interest at Refugio now is centered in Houston Gulf Gas Co.'s No. 1 M. F. Lambert, which apparently has found a third and lower oil-producing horizon. This well has run 5⅜-inch casing to 5,872 feet to test a sand at 5,890-92 feet and is waiting cement to set. A drill stem test of the sand showed 15 fourbles of oil of higher gravity and far better quality than that found in either the 3,700-foot or 5,400-foot sand horizons. The sand itself is the only true sand yet encountered in the Refugio district. The sand, however, was passed through at 5,892 feet and the bottom of the hole which is at 5,895 feet, is in shale.

The Lambert test not only is in a new deep sand but indicates a further substantial widening of the producing area of the district. The test is approximately 11,000 feet to the northeast of the nearest 5,400-foot production, the latter being east of the 3,700-foot field. Although the north, south and west of Refugio have been fairly well defined there has been no limit placed on the east and the finding of an oil sand that distance east of production opens unlimited possibilities for wildcat development. A producing area 5 miles north and south and approximately 2 miles east and west already has been proved and now the spread of this producing area still further east is likely.

Development of the 5,400-5,500-foot horizon to the north received a setback when Union Producing Co. got a salt water well in its No. 1 Ben Shelton at a total depth of 5,513 feet. This is approximately 600 feet north of the same company's No. 1 O'Brien, the discovery well. The Texas Company's No. 1 Shelton, now drilling below 5,140 feet, lies between the two wells. Union Producing Co.'s No. 2 O'Brien, 600 feet south of the discovery well, is waiting cement to set the sand at 5,554-68 feet.

There were no completions at Refugio during the week but approximately 50 wells are being drilled in the area and a half dozen new locations have been made and new rigs are moving in. With the east edge of production undetermined, the town lot ownerships force active drilling of that area.

Gulf Coast Pipe Line

Gulf Coast Pipe Line Co. completed its new 8 and 10-inch loop line late in the week and now is in a position to handle from 40,000 to 50,000 bbls. daily out of the field, which is more than the present daily production. This is the first time since the starting of the active play that there has been adequate outlet facilities as it has been possible until now to move only from 10,000 to 15,000 bbls. by pipe line, leaving the remainder of the production to the overtaxed loading racks or to storage.

Daily average production of the field for the week ending February 15 was above 37,500 bbls., a slight increase over the preceding week. However, sufficient wells are due to be tested to boost the daily output above the 40,000-bbl. mark within the next few days.

Good Well at Humble

The Texas Company got a good well in the 3,100-foot pay on the east side of the Humble Field. This was its No. 30 Carroll which came in flowing 105 bbls. an hour of 25 gravity pipe line oil from a total depth of 3,102 feet. This well marks the return of that company to a part of the field which has been inactive for several years.

L. & M. Co.'s No. 5 Wisdom, A. Darst Survey, Damon Mound, which made a 500-bbl. well at a total depth of 2,332 feet, now is flowing better than 70 per cent water. This well was the first successful completion at Damon Mound in many months. Gravity of the oil is 19.5 degrees.

West Production Co. added a 1,500-bbl. well north of the San Jacinto River on the extreme north side of the Humble Field. This is its second well drilled there on its Foster lease and is 100 feet from a test abandoned by the Gulf Production Co. several years ago. These wells, however, fail to hold up. They are in a deep sand, the latter being at approximately 4,550 feet.

Humble Oil & Refining Co.'s No. 11 Brazos at DeWalt, Fort Bend County, added 900 bbls. initial production to that field from sandy shale at 3,725 feet. Humble and Valley Oil Corp.'s No. 8 Urban, Raccoon Bend, was put on the pump for 63 bbls. at 3,160 feet.

Shell Petroleum Corp. has abandoned its No. 1 Marceau, Section 32-12s-3w, on what is known as the Mallard Bay prospect, Cameron Parish, Louisiana. The wildcat, the first test on the prospect, a geophysical discovery, was drilled to a total depth of 7,229 feet. It was quit in hard, sandy lime and had not encountered any showings.

Gulf Refining Co.'s No. 25 Stark, a deep test drilled on the north side of Thibodaux (Lutcher) Dome, LaFourche Parish, drilled into salt and at last report was at 3,700 feet after approximately 270 feet of the salt. This is the first deep test on the dome.

Penetrated Salt

Of considerable interest from a geological standpoint was Humphreys Corp.'s No. 2 Illfrey, a deep test on the east side of Barbers Hill, which test drilled through more than 800 feet of salt and back into formation again. On several instances fingers of salt have been drilled through but this is the largest body of salt which has been penetrated. The majority of tests are abandoned on hitting the salt; rarely does a hole go even as much as 200 feet into it. It has been the opinion of most geologists that the edges of most of the domes overhang formations productive of oil but few operators have dared going very deep into the salt to prove this.

Daily average production of the Gulf Coast division for the week ending February 15 continued above the 200,000-bbl. mark although it fell off 2,044 bbls. from the peak set during the preceding week. Daily production by fields was:

GULF COAST
Average Daily Production for the Week Ending February 15

Southeast Texas	
Allen	115
Barbers Hill	23,500
Batson	1,160
Big Creek	4,040
Blue Ridge	1,904
Brenham	140
Boling	1,091
Clay Creek	1,649
Damon Mound	527
DeWalt	12,086
Fannette	1,232
Goose Creek	4,963
Hankamer	71
High Island	1,311
Hull	8,617
Humble	15,459
Jasper County	25
Lost Lake	625
Markham	330
Nash	375
North Dayton	1,170
Orange	2,547
Orchard	72
Pierce Junction	10,691
Port Neches	1,797
Raccoon Bend	12,049
Refugio	37,540
Sheeks	871
Saratoga	1,006
Sour Lake	2,205
So. Liberty-So. Dayton	5,903
Spindletop	18,391
West Columbia	6,177
Total Southeast Texas	179,639
Week ending February 8	181,773
Decrease	2,134
South Louisiana	
Anse La Butte	45
Bayou Blue	276
Bayou Bouillon	47
Black Bayou	600
Caillou Island	66
Edgerly	597
Jennings	1,121
Hackberry	3,073
Lake Barre	252
Lake Pelto	183
Lockport	3,459
New Iberia	7
Port Barre	1,424
Sorrento	100
Starks	434
Sulphur	5,250
Sweet Lake	20
Vinton	4,213
Welsh	188
White Castle	378
Total South Louisiana	21,733
Week ending February 8	21,643
Increase	90
Total Gulf Coast	201,372
Week ending February 8	203,416
Decrease	2,044

GULF COAST FIELDS AND WILDCATS

Week Ended February 15

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Production Co.'s No. 2 Barber, north side	Drlg. shale 6,205 ft.
Mills Bennett Production Co.'s No. 7 Barrow, north	Rigging up to deepen.
Mills Bennett Production Co.'s No. 3 J. F. Wilburn, southeast	Drlg. rock 2,074 ft.
Mills Bennett Production Co.'s No. 3 Collier	Drlg. shale 1,252 ft.
Gulf Production Co.'s No. 2-A Wilburn, southeast	Drlg. gumbo and lime 1,632 ft.
Humphreys Corp.'s No. 1-F Barber, northwest	Drlg. gumbo and lime 1,828 ft.
Humphreys Corp.'s No. 2-C Kirby	Drill stem stuck 4,774 ft.; to sidetrack 2,032 ft.
Humphreys Corp.'s No. 1 McLean, east side	Drlg. hard sand and lime 5,767 ft.
Humphreys Corp.'s No. 2 Ilfrey, east side	Drlg. shale and lime 4,716 ft.
Humphreys Corp.'s No. 1 Morgan	Drlg. cap rock 2,275 ft.
McAlbert Oil Co.'s No. 1 Higgins	Rig.
McAlbert Oil Co.'s No. 4 Woodward southeast	Culling screen 5,113 ft.
Republic Production Co.'s No. 3 Kirby (southeast)	**Rigging to pump 5,335 ft.**
Sinclair Oil & Gas Co.'s No. 3 Wilburn, southeast	Cemented casing to test oil sand 5,103 ft.
Sinclair Oil & Gas Co.'s No. 4 Wilburn, southeast	Drlg. gumbo and lime 3,166 ft.
Sinclair Oil & Gas Co.'s No. 5 Wilburn, southeast	Drlg. shale and lime 1,995 ft.
Sun Oil Co.'s No. 4 Wilburn (southeast)	Drlg. shale and lime 4,194 ft.

(Continued on Page 130)

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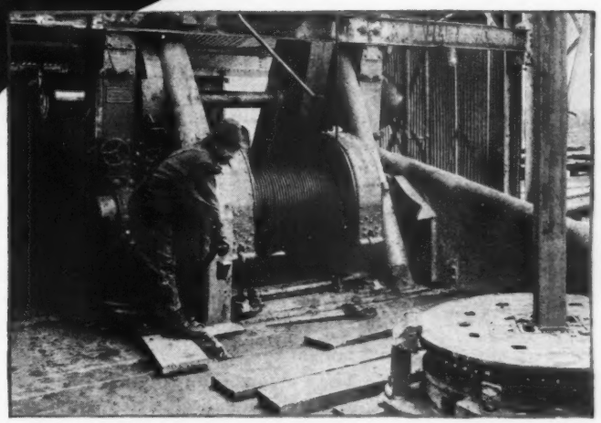

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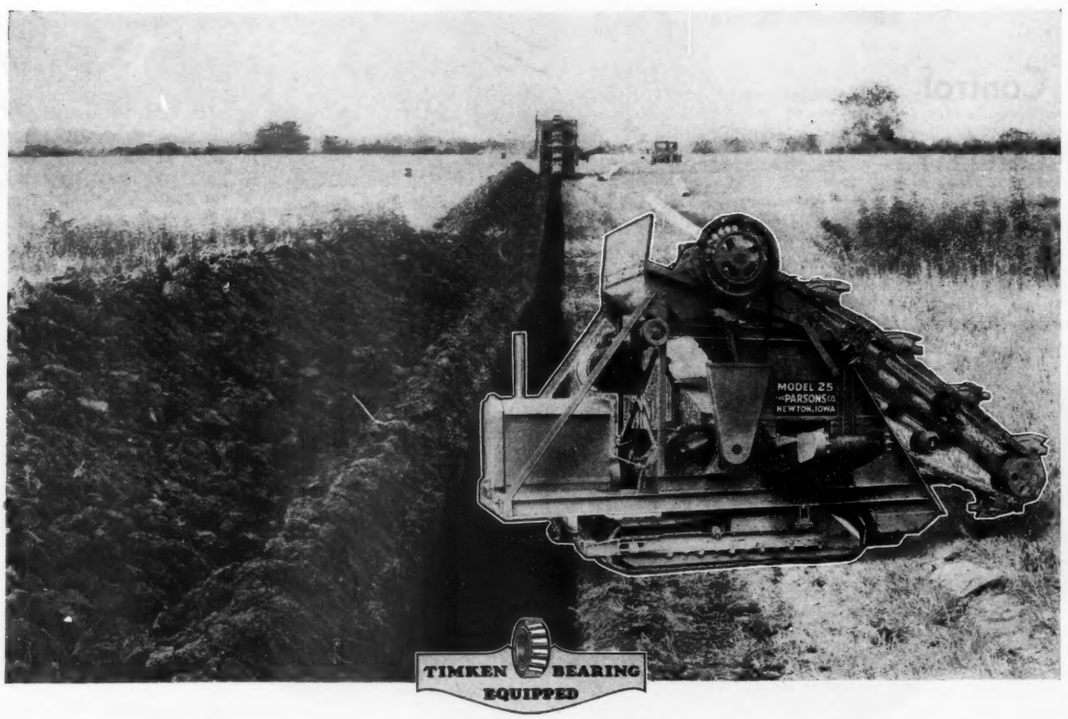

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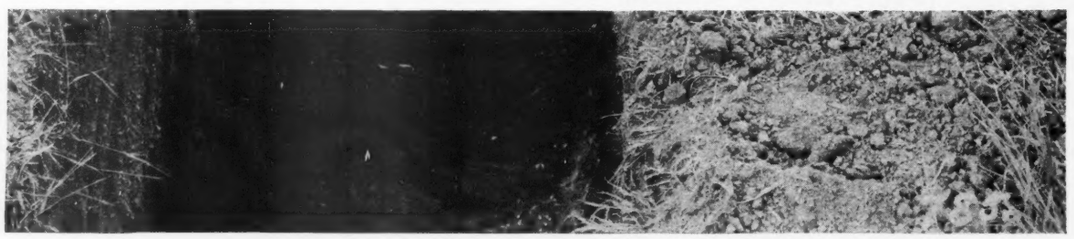


TIMKEN *Tapered Roller* **BEARINGS**

No. 1 Appling Offsets Being Watched

Tests Around Magnolia Well in Darst Creek Field Tend to Confirm Theory of Crevice Conditions Under Which It Is Producing

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Feb. 17.—Tests around the Magnolia Petroleum Co.'s No. 1 Appling in the Darst Creek Field in Guadalupe County further confirm the crevice conditions under which the No. 1 Appling is producing. It was brought in several months ago. It is 4 miles northeast of the discovery well of the field and never went into the Edwards lime. Recently operators started drilling offsets. The line of the Edwards lime formation must pass close to the Appling which may be producing from the fault plane. Hence the interest in these offsets which for two weeks or more have seemed about ready to disclose something.

Cranfill & Reynolds' No. 1 Appling, a north offset, is down past 2,800 feet and looks hopeless, being on the downthrow side. The Magnolia's No. 1 Appling is producing at a little below 2,500 feet. Cranfill & Reynolds will plug back and probably shoot the well in the Austin chalk. Magnolia Petroleum Co.'s No. 1 Roamel, located 500 feet southwest of its No. 1 Appling, is dry at 2,936 feet in the Edwards. Magnolia Petroleum Co.'s No. 1 Echols, almost due south of its No. 1 Appling, is dry in the Edwards at 2,715 feet, though it showed some oil when bailed, and the Magnolia's No. 2 Echols, still farther south, is in Buda at 2,600 feet.

The Magnolia's No. 3 Roamel, located 450 feet southwest of the Magnolia's No. 1 Appling, ran into a cavity at 2,525 feet and lost the returns, and immediately the No. 1 Appling began to increase in production. The Texas Company's No. 1 Roamel, located about three locations south of the Magnolia's No. 1 Appling, was last reported drilling at 2,572 feet and looked doubtful. This drilling around that part of the field leaves the location of the line of production of the field still in doubt, if it is to extend that far to the northeast. Completions in the field the last week added little of interest.

A new line of wildcat play is breaking out in the Guadalupe County territory 5 miles northwest of the Darst Creek Field and on a different line of structure. Adams & Lyles are building a derrick for their No. 1 J. Sowell. Trinity Drillers have a location for their No. 1 J. M. White, in the Mitch Miller Survey, and L. W. Conner has a location for his No. 1 William Harborth, in the Robert Hall Survey. This location is about a mile northwest of the test he drilled several months ago on the W. Weinaug farm. It is well known that there is a line of structure in that part of the country and efforts to find it have not been lacking in the past.

Medina Gasser

One of the features of the last week is a big gasser at shallow depth in Medina County near Noonan. Pearson Oil Co.'s No. 4 Medina Valley Investment Co. (first reported as No. 4 Mangold) at 715 feet blew in and ran wild but has been mudded off and the casing set and cemented. There is probably a serpentine plug in that territory which is at the north end of Chicon Lake. This company brought in a smaller gas well at about the same depth last summer. The size of the new test makes it of especial importance at this time to operations in that territory.

In the territory around the Pettus area in Bee County there is a new line of activity developing on one of the lower benches of the coastal plane, the new line being southeast of the Pettus line and along the line of the Nichols' No. 2 Hicks, reported as a gas well recently at 1,920 feet and later turned in a deal to the Moody-Seagraves interests. Shell Petroleum Corp. has taken a block to the southwest of the Nichols gasser. Trinity Drillers have made a location on the Bee-Live Oak County line still farther southwest, and T. B. Slick is interested in the deal. Slick also has closed a deal for a lease on 8,000 acres in the Chapa ranch in the southwestern part of Live Oak County and out of line with any of the play mentioned above.

Brooks County

Houston Oil Co. killed its No. 1 Wormser-Holbien in northwestern Brooks County which came in at 4,152-65 feet flowing at the rate of about 200 bbls. of oil. It developed salt water but when choked made only oil, but the company has decided to deepen and the tools are already turning around.

Laredo District

Blair & Son and Claggett's No. 2 Trevino, reported last week as standing 800 feet in oil in Zapata County between the Jennings gas field and the Randado oil field, came in late in the week flowing at the rate of 15 bbls. an hour. This is decidedly the best well that has been brought in for that field. There are two or three other small producers. Total depth is 1,254 feet with casing set at 1,247 feet. This is about the same depth as the H. Muckelroy, Jr.'s, No. 1 Trevino, which was the discovery well. This last completion flows. The others all made small pumpers, or around 20 bbls., more or less. Blair & Son and Claggett's No. 2 Trevino is in Block 1 of Survey 66 and is 200 feet from the east line and 200 feet from the north line of the block.

Foster Barnsley got another good well in the Carolina-Texas gas field. It is his No. 7 Webster, in Survey 684, total depth 2,622 feet and estiamted good for 75 bbls. of oil. A few years ago when Usher Carson and the Associated Oil Co. drilled their No. A-2-D in this survey and got oil at 2,609 feet and the test was circled with offsets all dry the territory was abandoned for the time by the majors.

Southwest Texas

Branyon	21
Brooks	....
Buchanan	35
Bruner	25,632
Dale	357
Darst Creek	17,186
Kingsville	171
Larremore	92
Luling	9,275
Lytton Springs	919
Manford	585
McMullen County	47
Medina County	22
Mirando	9,039
Pettus (Bee County)	Off
Somerset	1,694
Star	39
Yoast	805
Total Southwest Texas	65,922
Week ending February 8	66,652
Decrease	730

Got Farther From Gas Area

Usher Carson stuck to it and moved south and southeast to get farther from the gas area and as a result he and other operators, including Foster Barnsley, have developed some good oil production and the crude is high gravity. In that area at around 2,600 feet three wells producing daily average of 85 bbls. for the three, the new well of Foster Barnsley being the fourth completion in that sand. There are three tests at around 3,000 feet, making a total of 40 bbls. daily average. This is not a fair average of the field, however, as it is capable of doing better. The tests thus far completed are scattered and there is considerable acreage that is proven.

In the territory around the O'Hern-Seacord Pool Where Magnolia Petroleum Co. recently completed its No. 1 Brennan Benavides, opening to oil production a new sand at 2,777 feet and got a showing of oil on drill stem test in the No. 4 Brennan Benavides at 3,070 feet, O. W. Killam has started his No. 18 Bruni which is near the Magnolia Petroleum Co.'s No. 4 Benavides. Killam will drill to 4,000 feet. The Magnolia has set screen in its No. 4 and is ready to make a test.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Alexander Boynton's No. 1 fee, in the John Sharp Sur., 3,645 varas E W line, 2,070 varas S N line of Sur., SW end of Somerset Field ..... T. D. 2,512 ft. in Buda; abandoned.

Alexander Boynton's No. 1 J. Hoffman, 2,122 ft. from E line, 1,550 feet S line of tract in the John Sharp Sur., 3 miles SW from Somerset Field ..... T. D. 600 ft. in shale and sand.

BASTROP COUNTY

B. L. Batts et al's No. 1 A. A. Alexander, W. M. Eastland Sur., 4,190 ft. to NW line, 1,320 ft. to SW line of Sur. ..... Shut down 1,325 ft.

Jim Harper's No. 1 Mitchell, 150 ft. from SE cor. Blk. 111, Bastrop Townsite ..... Derrick.

Johnson Bros.' No. 1 J. A. Cox, 980 ft. from NE line, 150 ft. from SE line of tract in Jas. Blalock Sur..... T. D. 2,485 ft.; dry and abandoned.

Abernathy et al's No. 1 A. Aldridge, in the Martha Barker Sur., 2,750 ft. SE and 450 ft. NE of 241-ac. tract or 2,000 ft. SW and 4,500 ft. NW of Sur. ..... T. D. 2,005 ft.; drlg. in Taylor marl.

Superior Oil Co.'s No. 1 A. Lasher, D. Dykes Sur., 600 ft. to S and W lines of Sur. ..... Moving in rig.

BEE COUNTY

Houston Oil Co.'s No. 1 J. F. Porter 288.3-ac., 1 mile SW of No. 1 McKinney, in the A. Smalley Sur. .... Rigging up.

Dr. Bozo & Cooper's No. 1 A. J. Kimball, C 189 acres in the Stephen Winship Sur. ..... Spudded in.

Morgan Oil Corp.'s No. 1 Geo. A. Ray, 2 miles SW of No. 1 McKinney, NW Medio Creek, NE part Geo. Ray 936-ac. tract in the John W. Williamson Sur.... Spudded in.

The Texas Company's No. 3 Tipps ..... T. D. 1,600 ft.; drlg. in sandy shale.

BEXAR COUNTY

Burton Oil Co.'s No. 1 P. H. Shook, in Monjares Sur., 3,150 ft. to E line, 150 ft. to N line of farm, 10 miles SE from San Antonio ..... T. D. 150 ft.; drlg. cemented 50 ft. surface casing.

H. H. Wallace et al's No. 2 Dulnig in the Justo Esqueda Sur., 5 miles SE from San Antonio ..... T. D. 1,515 ft.; fishing for core barrel.

Dingman Drlg. Co.'s No. 1 W. Kelso, 1,400 ft. from E line, 822 feet from S line of tract, near Alta Vista Field in the J. M. Urriegas Sur. ..... T. D. 1,500 ft.; dry and abandoned.

F. H. Eckert's No. 1 Sandemer, Sur. 52 ..... T. D. 700 ft.; completed 6 bbls. per day.

Moore-Jauer's No. 1 Holly R. Ellison ..... T. D. 1,980 ft.; cemented off heaving shale.

BROOKS COUNTY

Amos Dinn, trustee's No. 3 Garcia-Ramos, Share B-1, Las Mestenas y Gonzales grant, 1,300 ft. S line, 2,325 ft. W line of Share B-1 ..... T. D. 1,655 ft.; standing.

Humble Oil & Ref. Co. and Shell Pet. Corp.'s No. 1 Singer, Alta Verde Subd., 2,500 ft. S of N line, 333 ft. W of E line of Sec. 312 ..... T. D. 2,611 ft.; drlg. in gumbo.

Continued on Page 129)

COMPLETIONS

Darst Creek—Guadalupe County

The Texas Company's No. 1 Parrish, 150 feet from south and west lines of Parrish tract, in the Jacob C. Darst Survey; total depth 2,644 feet; 850 bbls. Same company's No. 1 A. E. Dowdy, 150 feet north, 150 feet E line of lease, in the J. C. Darst Survey; total depth 2,604 feet; swabbing 750 bbls.

Gulf Production Co.'s No. 3 Posey-Baker, 150 feet each way northeast corner of tract, in the J. R. Robinson Survey; total depth 2,567 feet; flowing 400 bbls.

Humble Oil & Refining Co.'s No. 6-A Denman, 430 feet east from north line, 5,150 feet from south line of lease, in the A. S. Emmett Survey; total depth 2,596 feet; 850 bbls.

Gulf Production Co.'s No. 1 Posey-Baker, 500 feet southwest line, 150 feet southeast line of 71-acre tract, in the J. R. Robinson Survey; total depth 2,590 feet; flowing 400 bbls. per day. Same company's No. 2 Posey-Baker, 1,150 feet southwest line, 150 feet northwest line of tract, in the J. R. Robinson Survey; total depth 2,585 feet; flowing 25 bbls. per hour.

Humble Oil & Refining Co.'s No. 1 Tadlock, 702 feet from north line, 165 feet from west line of tract, in the J. C. Darst Survey; total depth 2,643 feet; swabbing 125 bbls.

Magnolia Petroleum Co.'s No. 4 Div, 1,330 feet from northeast line, 150 feet from southeast line of lease and farm, in the J. R. Robinson Survey; total depth 2,582 feet; 700 bbls, 18 per cent water.

The Texas Company's No. 3 Henry Willie, 1,150 feet east-west line, 150 feet south-north line of tract, in the Jacob Darst Survey; total depth 2,631 feet; flowed 1,000 bbls.

Trinity Drillers' No. 1-B Miller, 150 feet each way out of the northwest corner of 23.5-acre tract, in the J. B. Alexander Survey; total depth 2,625 feet; swabbed 500 bbls.

Kohler Pool—Duval County

Allied Gas Co.'s No. 1 Peters, 660 feet north line, 660 feet west line, Survey 161; total depth 1,770 feet; 30,000,000 feet of gas, 530 pounds rock pressure.

Jennings Pool—Zapata County

Blair & Acklin's No. 2 Trevino, Block 1, Survey 66, 150 feet west line, 200 feet north line; total depth 1,254 feet; estimated 50 to 100 bbls. oil; standing 800 feet oil in hole; cannot bail down.

O. W. Killam's No. 19 Cuellar, 150 feet northeast line, 3,876 feet northwest line of 1,772-acre Cuellar tract, Cerrito Blanco grant; total depth 1,557 feet, flowed 500 bbls.

ABANDONED TESTS

Saxet Pool—Nueces County

Saxet Oil Co.'s No. 5 Dunn, 750 feet northeast of southwest line of Dunn

(Continued on Page 132)

Lea Pool, New Mexico, Extended South

Proration of Oil by Pipe Line Companies and Plans of State Authorities to Tax Oil Lands. Little Buffalo Basin, Wyo., Well

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Feb. 17.—Proration of oil by pipe line companies, a royalty deal establishing a value of $900 an acre in the Hobbs area, the entrance of the first train into the county, and plans of state authorities to tax oil lands were among the week's developments in Lea County, New Mexico. The Lea Pool was extended three-eighths of a mile to the south in Snowden & McSweeney's No. 1 State, and the Texas Production Co.'s No. 1-B State made 286 bbls. the first 24 hours. The Midwest's No. 6 Wright, the only active operation in the Hobbs Pool, is being made into a deep test. The Ohio Oil Co. has made a location in the Eunice area and the Empire Gas & Fuel Co.'s No. 3-B State, in the Empire area, is being abandoned. Eddy County had one completion in Etz Brothers' No. 1 Etz, a 2,000,000-foot gas well. Water was encountered in the second Wall Creek on the Dulce structure in Rio Arriba County.

The Carbon Dioxide & Chemical Co. is moving in for a well on the Farnham Dome in Utah in which it will drill for gas to manufacture dry ice.

Seven Colorado wildcats are resuming after being shut down on account of the cold weather. The Elk Springs structure in Moffat County is to have another test.

The Little Buffalo Basin Dome in the Big Horn Basin in Wyoming had an important completion in the Grebo Royalties, Inc., well, the first operation on top of the structure since 1914. A small gas well was completed in Oregon Basin, where the United States Geological Survey has ruled that each horizon shall be produced separately. One small Sundance sand well was completed in Salt Creek.

NEW MEXICO

The first train to enter Lea County, New Mexico, pulled into Jal in the southeastern corner of the county on January 31. The county previously had been well advertised as a county without a running stream, a bridge, a mountain or a railroad. The new line is the Texas-New Mexico Railway, a subsidiary of the Texas & Pacific. It is building northward through Lea County to Lovington. The next objective is Eunice, 22 miles north of Jal. It will then continue on to Hobbs and end at Lovington.

A royalty deal reported this week from the Hobbs area gives an interesting lineup on values established by recent completions in that pool. The Ohio Fuel Oil Co. purchased through Tate Brothers, of Lovington, 13⅓ royalty acres, or approximately a one-thirteenth interest in the 160 acres in the NE, Section 31-18-38, for a reported price of $900 per acre. The quarter offsets on the south the 160-acre tract upon which the Humble Oil & Refining Co.'s No. 1 Bowers is located. The operating lease is held by the Empire Gas & Fuel Co.

The New Mexico Tax Commission has had its representatives in Lea and Eddy Counties looking into the matter of assessing oil and mineral rights. Heretofore the land has been assessed only at its surface value as grazing or farm land but, it is stated, lists are being made up of mineral and oil conveyances which will go on the tax rolls.

The New Mexico Independent Oil Men's Association was addressed at Roswell on February 7 by E. G. Bedford, of Midland, Tex. He urged the producers, refiners and marketers to lay their case before the American public so it may know that the oil men's cause is just and that unless they receive a square deal they cannot long survive. He outlined a plan for the oil men to go "on the air" over the best radio broadcasting station available at least once a week. It provides for the raising of $52,000 to cover the cost of a year's broadcast.

Lea County has been placed on practically the same basis as fields in West Texas with recent cuts in the price of crude and proration of pipe line runs. The Texas Pipe Line Co., beginning February 1, is accepting only 500 bbls. a day from the Lea Pool, runs from the Jal Pool are held down to around 100 bbls. a day, and the Hobbs Pool, which has no pipe line connections, is mostly shut in. Cranfill & Reynolds, who have some empty tankage near Wink, Tex., may be permitted to run some of their Lea production to this storage.

Farmington, in San Juan County, is now receiving gas through the Southern Union Gas Co.'s line from Kutz Canon. This company is putting on a unique stunt in which it agrees to supply all consumers, except restaurants, with gas free until October 1.

Drilling operations are less active than a few weeks ago, though the announcement of several new locations point to an early increase.

Lea Area

The Lea Pool has been extended three-eighths of a mile to the south in Snowden & McSweeny's No. 1 State, NW cor. SW, Section 1-21-33, which is southeast of Cranfill & Reynolds' No. 3-B State, and due south of Continental Oil Co.'s No. 1 State. It began showing oil in a lime break at 3,800 feet and at 3,801 feet oil rose 3,000 feet in the hole. Operations were suspended to cement the 8¼-inch at 3,470 feet. This location was considered doubtful in the early stages of drilling. The elevation of the well is 3,781 feet. The base of the salt was at 3,420 feet and the top of the brown lime at 3,450 feet. The Texas Production Co.'s No. 1-B State, SW cor., Lot 5, Section 1-21-33, which ran into water and gave evidence of being close to the southeastern edge, was plugged back from 3,790 feet to 3,781 feet and put on the pump. It made 130 bbls. the first 9 hours and 286 bbls. in the first 24 hours, of which 5 per cent was water. The Continental Oil Co.'s No. 2 State, SW cor., Lot 12, Section 1-21-33, one location south of its No. 1 State, a producer, is bottomed at 3,489 feet and bailing water to drill out plug. Cranfill & Reynolds' No. 1-D State, SE cor., Lot 6, Section 3-21-33, which will test the west side, is drilling at 875 feet.

Hobbs Area

The only active operation in the Hobbs Pool is the Midwest Refining Co.'s No. 6 Wright, NW cor. SW, Section 14-19-38, which is being made into a deep test after running into sulphur water at 4,228-33 and 4,275 feet. At last reports it was drilling in lime at 4,408 feet. The Humble Oil & Refining Co.'s No. 1 Bowers, C NE SE, Section 30-18-38, ran the 3-inch tubing to 4,035 feet, 71 feet off bottom. It made 162 bbls. in 30 minutes through the tubing, the pressure on the tubing being 600 pounds, and on the well 750 pounds. It has been shut in indefinitely. The Ohio Oil Co.'s location 1¼ miles to the southeast of the Humble well, has changed its name from No. 1 State to No. 1 State-Northrup. It is in the NE NW SE, Section 32-18-38. The same company's No. 1 State, NE cor. SW, Section 30-18-38, half a mile to the west of the Humble well, is drilling a water well. The Penn Oil Co.'s No. 1 State, NE, Section 21-19-36, to the west of the Hobbs area, is drilling at 5,035 feet.

Eunice Area

The Ohio Oil Co. has made a location for its No. 1 State-McDonald in the SW NW SW, Section 15-22-36, and is moving in materials. The footage is 330 feet from the west line and 1,650 feet from the south line. This promises to be an interesting test. It is 2 miles northeast of the Continental Oil Co.'s No. 1 William Meyers, SW cor. NW, Section 28-22-36, which is bottomed at 3,750 feet and drilling up bailer. At 3,257 feet the Continental well made 35,000,000 feet of gas. The Ohio's location is 3 miles southeast of the Empire Gas & Fuel Co.'s No. 1 Closson, NE NW SE, Section 6-22-36, which had 110,000,000 feet of gas at 3,570 feet and is bottomed at 3,745 feet fishing for two strings of tools. Two and three-fourths miles north of the Ohio's location, the Gypsy Oil Co.'s No. 1 Ramsey, SW cor., Section 34-21-36, was completed a year ago as a gas well at 3,856 feet total depth.

Empire Area

The Empire Gas & Fuel Co.'s No. 3-B State, SW NE SE, Section 5-21-35, is being abandoned at a total depth of 4,695 feet. It made 2 bailers of sulphur water per hour at 3,938 feet and had a hole full of water at 3,945 feet. The elevation is 3,644 feet. It topped the salt at 1,840 feet, bottomed it at 3,310 feet and topped the brown lime at 3,435 feet.

Cooper Area

Cranfill & Reynolds' No. 1-C State, SW SE SW, Section 16-23-36, is drilling at 1,500 feet in anhydrite. It topped the salt at 1,430 feet. The elevation is 3,421 feet. The Texas & Pacific Coal & Oil Co.'s No. 2 State, NW cor. SW, Section 21-23-36, which has been on a production test from the lime at 3,757 feet, has shown a drop to 230 bbls. of oil and 140 bbls. of water per day. About 3 weeks ago it was making an average of 580 bbls. of oil and 100 to 120 bbls. of water per day. This company's No. 3 State, NW SW NW, Section 21-23-36, two locations north of No. 2, is drilling at 3,355 feet.

Jal Area

The Continental Oil Co.'s No. 2 Sholes, SW cor. NW, Section 13-25-36, continues to be shut down after putting up rig, pending outcome of negotiations with the government as to whether it shall be drilled. The Humble Oil & Refining Co.'s No. 1 Koonce, SE cor. NE, Section 14-25-36, set the 6⅝-inch on bottom at 2,878 feet and is waiting for cement to harden. The elevation is 3,116 feet and it topped the brown lime at 2,855 feet. The bottom of the salt was at 2,790 feet. The Empire Gas & Fuel Co.'s No. 2 Lindley, NE cor. SE, Section 14-25-36, is drilling at 512 feet. The Magnolia Petroleum Co.'s No. 1-X Lindley, SE cor. NE, Section 26-25-36, is drilling at 3,100 feet in gray lime. The top of the brown lime was at 2,951 feet.

Lovington Area

The Barnsdall Oil Corp.'s No. 1 Bronson, SE cor., Section 28-16-38, has resumed drilling after making a new contract and is bottomed at 4,735 feet in lime and anhydrite. It topped the lime at 4,697 feet. The elevation is 3,711 feet.

Eddy County

There was one completion and several

(Continued on Page 113)

SLIGHT DECLINE IN TURNER VALLEY PRODUCTION DUE TO FREEZING

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Feb. 15.—Official figures show a further slight decline in Turner Valley production for January. The aggregate of light crude oil and crude naphtha was 88,975 bbls. compared with 90,625 bbls. in December, a drop of 1,650 bbls. The decline was in deliveries to Regal Oil & Refining Co., deliveries to Imperial Oil, Ltd., of both products showing some increase. The production for the month would probably have shown an increase but for the intermittent freezing of some of the deep lime producers, affecting some of the larger wells.

Crude naphtha deliveries to Imperial Oil, Ltd., were practically stationary, aggregating 66,030 bbls. compared with 66,023 bbls. in December. Light crude deliveries to Imperial showed a fair increase, due to the transfer of some production from the crude naphtha to the light crude category. The totals were 11,517 bbls. in January and 9,643 bbls. in December. Deliveries to the Regal refinery were 11,428 bbls. in January, compared with 14,959 bbls. in December.

Only one new producer was added, British Dominion Oil Development Corp.'s No. 2 in the Central Turner Valley. This well, which took a small light crude production when drilling is now making regular deliveries to Imperial Oil, Ltd., and in its first month averaged 112 bbls. a day, largely from the deep lime. Home Oil Co.'s No. 3 was the largest producer, showing a slight increase over the previous month and averaging 557 bbls. a day. Northwest-Associated's No. 1 was partially frozen off, while Dalhousie Oil Co.'s No. 1 showed a partial comeback.

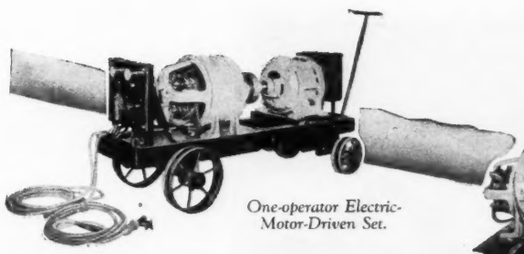
A larger production is anticipated for February through the recent bringing in of three new producers, Home Oil Co.'s No. 4 and Royalites' Nos. 21 and 23, though the former took some production while drilling. Royalites' No. 4, formerly the field's outstanding producer, is reported to have come back to around 200 bbls. a day, which, if maintained, should add to the February total.

Imperial Operations

Among the Imperial tests in South Turner Valley, Home Oil Co.'s No. 4, LSD 14, Section 20-19-2w5, has been placed in steady production from the deep lime at 5,584 feet. The well made around 17,000,000 to 20,000,000 feet a day with about 300 bbls. crude naphtha recovery; it is still clearing itself and may reach 400 bbls. The well is south of Home's No. 3 and materially extends the proven portion of the lease. Lowery Petroleums' No. 1, NW, Section 17-19-2w5, has got the first gas show 26 feet in the lime at 5,132 feet and is drilling. Hargal Oils' No. 1, Section 20-19-2w5, after getting the lime at 5,055 feet is rigging up diamond drill to carry the test to production. Home Oil Co.'s No. 5, LSD 7, Section 20-19-2w5, is drilling at 4,119 feet, and logging the highest of the Home wells.

In the Central Turner Valley, two new producers have been added to the Imperial list. Royalite's No. 21, LSD 1, Section 13-20-3w5, is taking a small production from the lime at 5,032 feet; and

(Continued on Page 136)



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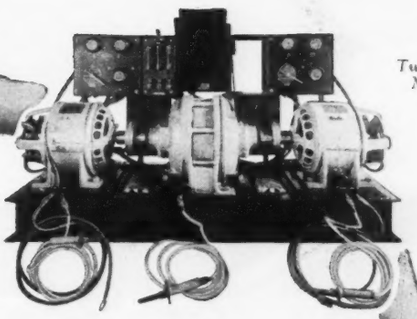

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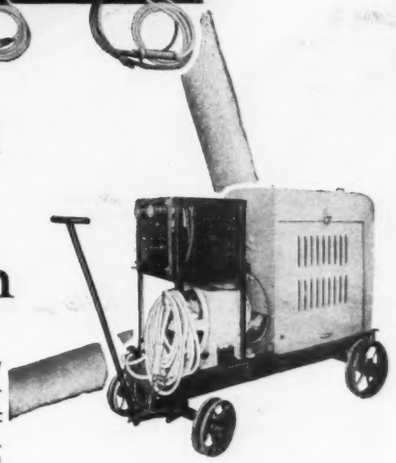

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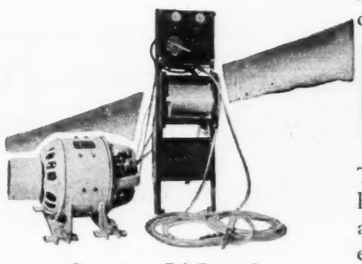

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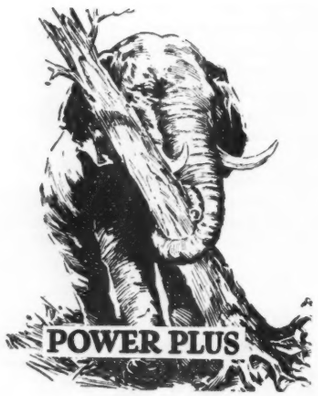

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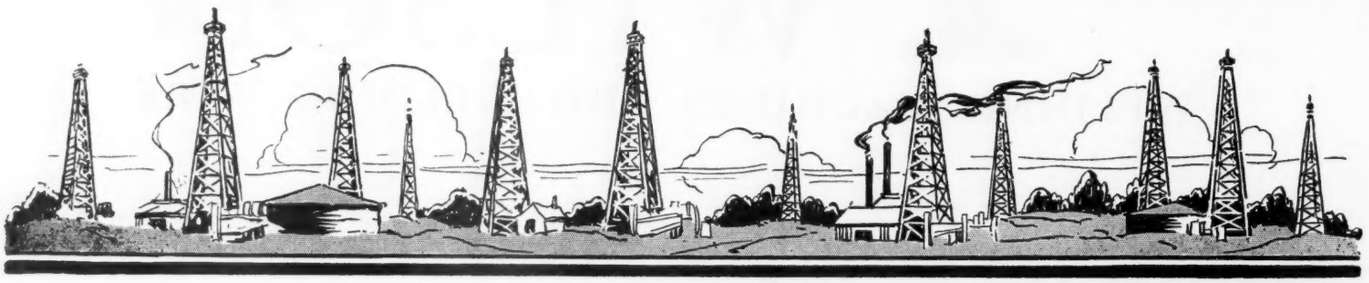

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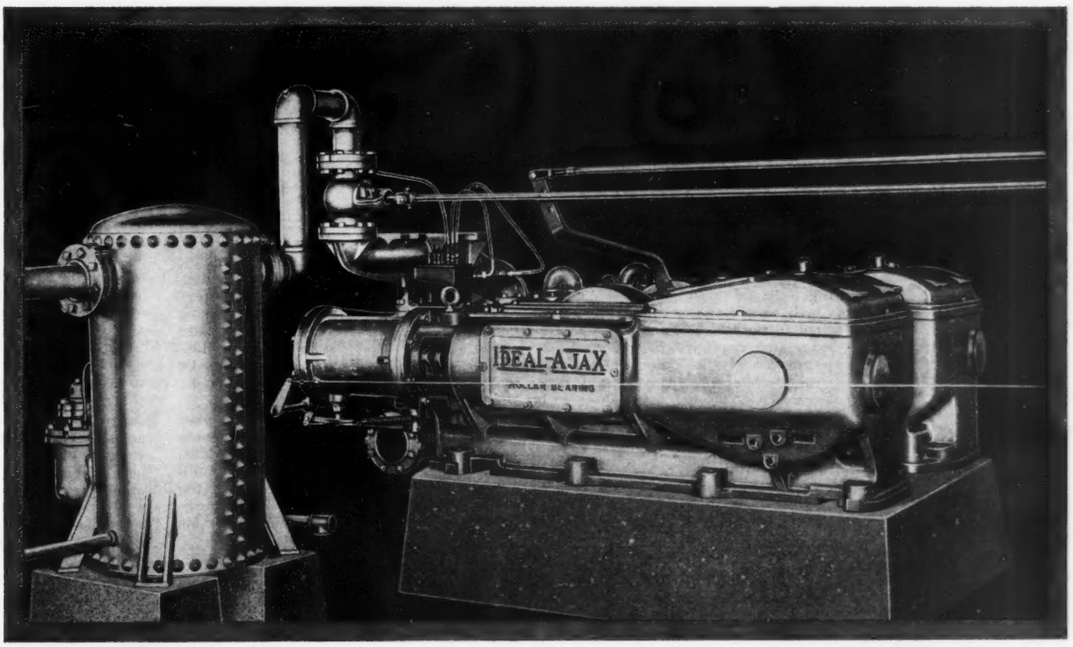

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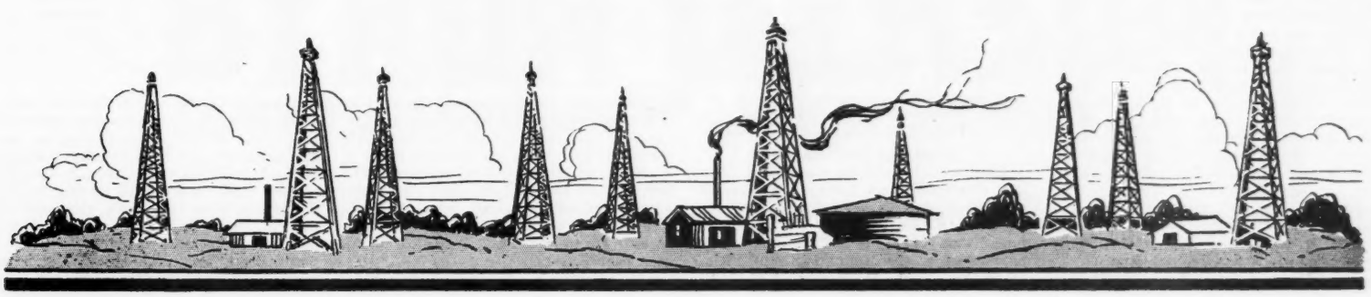


Flow Tests Boost California's Output

Operations Resumed Temporarily in the Elwood, Santa Fe Springs, Long Beach, Ventura Avenue and Seal Beach Fields

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Feb. 15.—Daily production in California, reflecting a temporary resumption of operations in the Elwood, Santa Fe Springs, Long Beach, Ventura Avenue and Seal Beach Fields, showed an increase the last week and this upward trend is expected to become more pronounced. The reason lies in flow tests to ascertain the actual potential production of producing wells in the fields mentioned. This information is needed as a basis upon which to predicate California's new curtailment program which contemplates the immediate reduction of State production to 609,000 bbls. per day and the maintenance of this figure for an indefinite period.

The Elwood Field of Santa Barbara County concluded its flow test early in the week before similar tests had been started in the other flush fields enumerated. As a result of the six-day flow test conducted at Elwood this field has an actual daily potential production of 65,000 bbls., indicating that operators in that area have been carrying more than their percentage of the shut-in effected November 2, 1929, and continued up to the present time. The real significance which attaches to the new potential established on actual flow tests is the spirit of co-operation which has prevailed in this field during the period of curtailment. This is especially noteworthy in view of the fact that the new potential is approximately 11,000 bbls. per day in excess of the theoretical potential of 54,975 bbls. assigned to the field by Umpire Paul Grimm.

Similar Potentials Unlikely

It is not likely, however, that many of the other flush fields will exceed or even approach the theoretical potential established by Umpires Grimm and Neal Anderson. This fact does not reflect on the work performed by the umpires as the original curtailment agreement signed October 25, 1929, did not provide sufficient adequate means of ascertaining the exact potenial. This is especially true at Santa Fe Springs, where progressive deep zone exploitation has presented a rapidly changing picture from day to day, thus making it almost impossible to predicate a well's potential production according to accepted theories governing production decline. Santa Fe Springs is credited with a potenial daily production of 370,711 bbls. for the period between February 1 and 15, inclusive. It will be several days before the actual potential is established as a result of the flow tests now being conducted, but it is expected that actual production will not come within striking distance of the field's theoretical rating.

The probable inability of Santa Fe Springs to equal the theoretical established potential of 370,711 bbls. on the final day of the six-day flow test can be attributed to two factors. The more important one is the possibility that Santa Fe Springs already has established its maximum daily potential production owing to progressive drilling and the rather heavy withdrawals of oil during the last several months. The theory advanced that Santa Fe Springs has already gone over the top is supported by completion data during the last month. New wells are not showing the large initial daily production chalked up heretofore and this is almost always a good criterion that peak production has either already been reached or is close at hand.

Several areas exist at Santa Fe Springs where maximum production has not yet been attained and companies having producing wells in these limited spots probably will exceed the individual potential credited to them by Umpire Grimm. This is especially true at the apex of the structure, where the Union Oil Co. and General Petroleum control several large leases which have not been intensively developed. Preliminary figures indicate the possibility that the Union Oil Co. may exceed its theoretical established potential and it is likely that several of the General Petroleum's wells located away from competitive drilling will also surpass the established potential.

In the intensely developed town lot area where drilling crews on one rig can swap yarns with drillers on the next lease, most wells should fail to reach their rated potential. This is especially true of wells which have been on production for several weeks as this competitive drilling will be reflected in the decline curve to a large extent.

The second factor which should mitigate against Santa Fe Springs reaching the rated potential of 370,711 bbls. per day is the probability that the individual rating of producing wells is too high. This is not due to any inefficiency on the part of the umpire or his staff but can be attributed to the fact that operators completing new wells give each well the gun during the 24-hour period upon which the potential is predicated. This practice is not general by any means but undoubtedly has played an important part in the establishment of the rated potentials.

May Not Attain Rated Capacity

Potential daily production of the Long Beach Field is estimated at approximately 175,000 bbls., although many operators do not believe that this field can reach its rated capacity. Production, previous to starting the flow tests late this week, was running around 110,000 bbls. daily so that operators must increase their daily output 65,000 bbls. to approximate the rated potential. This is not entirely impossible although recent developments indicate the possibility that field production will fall short of this objective.

Seal Beach and Ventura Avenue should not have much difficulty in equaling their rated potential daily production of 35,000 bbls. and 65,000 bbls., respectively, as curtailment work in both fields has been rigidly adhered to. In addition to crude oil curtailment, present daily production at Ventura Avenue reflects gas conservation. In fields where several separate and distinct horizons exist the six-day flow test will be conducted according to zones, although the test of each horizon will be conducted simultaneously with similar tests in the other zones.

It will not be possible to make an actual six-day flow test at Ventura Avenue owing to characteristics perculiar to this field but in lieu thereof the operating committee will select representative wells at strategic points to determine the effectiveness of present curtailment with respect to the field's potential. Because of the high gas-oil ratio and the sensitivity of wells at Ventura Avenue it would require at least 30 days before wells in this field could be brought back to their maximum production. The time element therefore precludes a test of the entire field, especially since a flow test under favorable conditions would result in waste of natural gas and the production of crude oil if conducted for the necessary period of one month. Upon conclusion of such a test it would take another month to gradually bean down the well to the desired minimum production.

To Drill in Playa Del Rey Field

The Los Angeles city council by a vote of 13 to 1 authorized the city attorney to prepare ordinances granting 12 property owners and their lessees the right to drill for oil in the discovered Playa Del Rey Field of Los Angeles Basin. The proposed ordinances on the recommendation of the city planning commission will require each permittee to post a $5,000 bond to guarantee performance of contract, particularly that portion governing the removal of all debris resulting from work in case of a dry hole. The report also specifies that provisions be written into the zoning ordinances setting forth highly technical points on the methods of drilling as well as the procedure to be followed during the period of production.

These stringent restrictions are being incorporated in the proposed ordinance to prevent any oil from finding its way to the ocean and thus causing pollution of bathing beaches. Although the city council acted on a limited number only of drilling permits this week, this will not prevent the granting of additional permits from time to time. The limiting of permits granted this week was for the purpose of expediting the necessary legis-

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Fuel oil	.....	.....	.....	.....	71,950	.....
Diesel and gas oil	.....	.....	.....	.....	359,861	389,566
Gasoline	147,198	21,028	290,356	41,479	2,302,916	2,417,479
Coastwise—						
Crude oil	438,853	62,693	233,493	33,356	1,737,445	3,403,777
Fuel oil	340,469	48,638	386,891	55,270	2,018,916	2,137,721
Diesel and gas oil	69,762	9,966	32,694	4,671	222,788	88,022
Gasoline	269,606	38,515	121,183	17,312	1,270,905	1,313,166
Kerosene	.....	.....	3,961	566	7,124	1,139
Exports—						
Crude oil	121,835	17,405	54,698	7,528	789,840	342,865
Fuel oil	109,505	15,644	359,337	51,334	1,727,150	2,182,274
Diesel and gas oil	164,513	23,502	187,495	26,785	594,680	236,213
Gasoline	267,329	38,190	208,026	29,718	1,906,339	1,230,018
Kerosene	.....	.....	131,891	18,842	221,118	397,600

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Diesel and gas oil	77,230	11,033	.....	.....	77,230	.....
Gasoline	.....	.....	68,125	9,732	68,125	411,068
Coastwise—						
Fuel oil	44,750	6,393	127,084	18,155	370,627	406,146
Diesel and gas oil	9,989	1,427	.....	.....	35,865	27,989
Gasoline	132,510	18,930	86,158	12,308	530,398	419,900
Kerosene	13,471	1,924	37,408	5,344	60,994	11,738
Exports—						
Crude oil	.....	.....	.....	.....	3,075	71,453
Fuel oil	68,050	9,721	.....	.....	122,143	51,080
Diesel and gas oil	108,650	15,521	.....	.....	114,700	62,815
Gasoline	98,500	14,071	14,071	2,071	377,426	546,954
Kerosene	.....	.....	.....	.....	133,749	68,030
Lubricants	.....	.....	.....	.....	.....	13,693

LARGEST GASSER OUTSIDE MUSKEGON STRUCK IN ISABELLA COUNTY

By Special Correspondent

MUSKEGON, Mich., Feb. 17.—Three wildcat wells, all between 15 and 20 miles distant from the proven Mount Pleasant Field, claimed the attention of operators in Michigan last week. One was completed as a 10,000,000-foot gasser, the largest outside the Muskegon Field, another was a 100-bbl. oil well in a territory where it appears that a new pool has been located and the third was about a 500,000-foot gas well half a mile from the original 3,800,000-foot gasser in Clare County, northeast of the proven field.

A fourth wildcat near the new 100-bbl. oil well must have struck a tight place in the limestone as it struck only a show of oil in the Dundee before drilling into bottom water.

There were six successful completions and no dry holes in Muskegon while there was only one completion in the Central Michigan Field.

Two of the wells in the western Michigan Field were gassers in the lower Traverse and Dundee formations, respectively, while the other four were small oil producers. The one completion in the Mount Pleasant Field was drilled another 10 feet and completed last week.

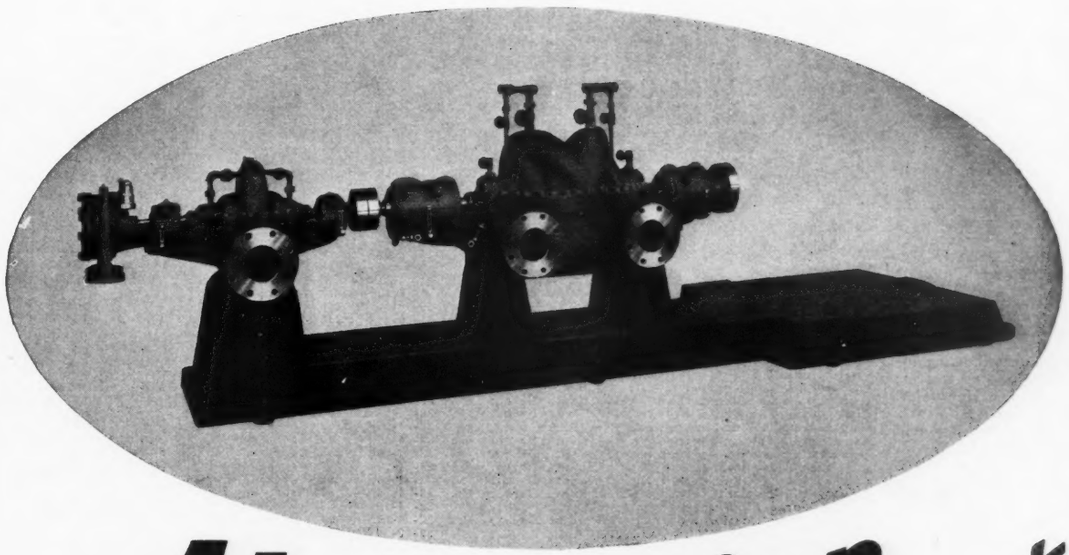
Promising Development

The most important completion from the standpoint of future development was the wildcat gasser brought in by the Isabella Oil Development Co. about 14 miles west of Mount Pleasant and 20 miles west of the Mount Pleasant Field. It is No. 1 M. D. Keeler, NW NW, Section 12-16n-6w, Broomfield Township, Isabella County.

Gas was first struck February 8 at about 1,325 feet deep in the Marshall formation. The original flow was estimated at 2,500,000 feet. The well was drilled deeper February 10 and after 7 feet more of drilling to a total depth of 1,332 feet production increased to about 10,000,000 feet. The well has since blown itself in a little deeper and was gauged showing an open flow capacity of 9,951,000 feet. It will be capped and another well will be started immediately by the company. Officers of the operating company, a Mount Pleasant concern, are: President, Floyd T. Mitchell; treasurer, William D. Hood; and secretary, Virgil W. McClintic.

The gas may be piped to Mount Pleasant if other wells are discovered. The fact that the James A. McKay and J. A. Mercier No. 1 McKay well, NE NW, Section 6-17n-4w, Grant Township, Clare County, struck a flow of nearly 4,000,000 feet in the Marshall formation at about 1,400 feet several weeks ago makes the new well the more significant. No. 2 McKay well, NE NW NW, Section 6-17n-4w, was drilled into the Marshall formation last week but was not as good as No. 1. It struck a flow of about 500,000 feet of gas at 1,445 feet and went almost immediately into bottom water. The gas will be mudded off and the well carried on to the Traverse and Dundee as a deeper test.

(Continued on Page 138)



Absorption plant PUMPS

This distinctive Byron Jackson gasoline absorption plant unit consists of four centrifugal pumps with only five stuffing boxes, two of which are hot. This unit handles lean and fat oil, water and gasoline. These pumps are mounted on one extended cast iron base plate with two flexible couplings and require only one driver with control apparatus. A big saving in motor or steam turbine investment is thus effected. Built in the light of many years of experience, the simplicity of this Byron Jackson unit immediately commends itself to the practical operator. This is but one example of the special equipment this company builds for oil refineries. In addition, pipe line and water service pumps are offered for every conceivable use.

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lation and future permits will be granted as a formality after establishing a precedent.

The extent and productivity of the Playa Del Rey Field of Los Angeles Basin is conjectural, only one well having been completed. The trend of the axis is unknown and its location and direction may change the entire picture. It is believed that the Ohio's discovery well on the Recreation Gun Club property is near the axis of the structure and not far removed from the apex.

Opinions Disagree

This deduction, which is theoretical in nature because of the absence of surface indications, is not shared by all operators. The theory of a northwest-southeast trend of the axis at Playa Del Rey with the discovery well located near the apex of the structure is predicated on a generally accepted theory of a group of fields located en echelon without respect to any sheer zone or line of folding.

Those who have made a careful detailed study disagree with this theory to the extent that they say the Playa Del Rey Field is one of a group of several fields located along a line of folding extending northward along the coast from Redondo to the Santa Monica Mountains. If the latter theory is correct, the axis of the structure at Playa Del Rey will not be as pronounced from the line of folding as the axis of the Torrance Field. This is of special significance because it may possibly open up a considerable amount of acreage. The subdivided town lot area will remain in the picture in any event but it is obvious that any shifting of the probable axis at Playa Del Rey will have a direct bearing on both the subdivided area and adjoining acreage which is held in large blocks.

The Ohio Oil Co., discoverer of the Playa Del Rey Field, is the largest holder of potentially productive acreage and is believed to control the most favorable acreage available. The Union Oil Co. entered the picture this week by closing a deal whereby it obtained 770 acres located west and south of the Ohio's gun club property.

The Union's new leases include 600 acres acquired from the Del Rey Co. and an adjoining 170 acres owned by the Vidor Syndicate. The two properties extend from the foot of the Del Rey Hills approximately 1 mile northwest to the southern boundary of the Ohio Oil Co.'s Recreation Gun Club lease, on which the discovery was made. This acreage is located within 4,000 feet of the discovery well and looks like an exceptionally good bet on the theory that the apex of the structure at Playa Del Rey is located southwest of the discovery well.

Work Started Promptly

The Union Oil Co. did not lose any time in starting work after the deals had been closed for the two new leases acquired. A crew of men was immediately dispatched to the field and road construction is already well under way. Unless something unforeseen develops, the Union should begin making hole in No. 1 Del Rey within the next two or three weeks as orders have been issued to push work ahead as quickly as possible. No further work will be instituted by the Union in this area pending completion of the company's first project.

The Ohio Oil Co. already has passed the 4,000-foot level in its No. 2 Recreation Gun Club and is rotating ahead in No. 1 Howland at 510 feet. Additional development is expected to get under way in the adjoining town lot area within the next two or three weeks and it is probable that at least 25 new rigs will be erected within the 30 days. Drilling operations may greatly exceed this estimate because of the proximity of the town lot area to the discovery well.

The Ohio's No. 1 Recreation Gun Club is located within 500 feet of the town lot area and the proximity of these lots to the discovery well makes portions of the subdivided area sure-shot territory. This should stimulate development in the immediate locality. The Pacific Western and the Cypress Petroleum hold exceptionally favorable acreage adjoining the Ohio's gun club property and each will probably spud in two or three new wells as soon as drilling permits can be obtained.

The attempt of several individuals to secure tideland permits skirting the town lot area of the Huntington Beach Field has been temporarily delayed owing to two adverse court decisions, although the way was left open to the plaintiffs in order that they may institute similar action at a later date. The litigation involves several thousand feet of tideland property located out in the open ocean extending seaward from the mean high tide line. The importance which attaches to this attempt to force Surveyor General Kingsbury to issue tideland permits lies in the fact that the property in question is definitely known to contain oil. A study of geological conditions in the area involved shows that the apex of the town lot structure at Huntington Beach is located out beyond the tide line so that any tideland development prosecuted should prove especially productive.

Operators holding acreage inside the tide line have been draining this submarine deposit for several years and it is imperative therefore that final action on the permits in question be carried forward to a final conclusion at an early date if any future work is to be remunerative. There are several relatively large flowing wells located on acreage paralleling the tideland property in question and others could be drilled as there are at least 10 additional first-line locations available. Most of this undrilled acreage, which is held by the Standard Oil Co. in fee, is located out in the Barley Flats section in the western end of the town lot section.

Substantial Production Found

In addition to the Barley Flats area, the Standard drilled a row of wells several years ago on the Pacific Electric Railroad's right of way paralleling the ocean front. All of these projects registered substantial production and their superiority over the output of wells further removed from the beach indicates the existence of production out in the open ocean.

The Superior Court at Santa Ana this week denied five petitions for writs of mandate directed against Surveyor General Kingsbury to compel issuance of permits covering tidelands and submerged properties fronting on the Huntington town lot section. Superior Judge Scovel sustained a previous ruling of Justice Plummer of the Appellate Court, and, although he held that the decision of the District Court of Appeals was in error, it was nevertheless binding upon the Superior Court.

The hearing at which State's Attorney General Webb personally opposed the petitions was marked by a vigorous attack upon Justice Plummer's ruling by counsel representing the plaintiffs. The ruling of the Appellate Court that territory inside the corporate limits of a city is covered by the State law, which prohibits the issuance of tideland permits on submerged land fronting on an incorporated city or within a mile in either direction, was declared erroneous by the Superior Court. The five petitions denied by the Superior Court on the probable erroneous decision of the District Court of Appeals were filed by Thomas Joyner, Arthur Carr, F. L. Fiesthamel, C. C. Cummings and Roy Maggart.

Santa Fe Springs

Regardless of the outcome of the flow tests being conducted at Santa Fe Springs, it is the general opinion that this field has already passed its peak and should decline below the actual potential now being established within a short time. Preliminary evidence of gas depletion has been in evidence for several weeks and the initial production of new wells finished tends to confirm this theory. A month or so ago a small well was the exception rather than the rule. Today large wells are conspicuous.

The initial production of completions chalked up during the last week will throw some light on prevailing conditions. The General Petroleum finished three small wells for an average initial daily production of 725 bbls. Its 168-E Santa Fe came in flowing 950 bbls. daily from the Clarke zone at 8,025 feet, while No. 146-C Santa Fe and No. 205 Santa Fe were even smaller, the former being good for 785 bbls. daily from 8,085 feet and the latter 440 bbls. initially from

(Continued on Page 134)

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well, location—	S.T.R.	Depth	Status
Union, No. 1 Buel Canyon, Santa Barbara Co.	X- 7-31	3,475	hd. sd. drilling
Tannehill, L. B., No. 1 Los Olivas, Santa Barbara Co.	23- 7-31	3,450	br. sh. drilling
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	3,875	br. sh. drilling
Ohio Oil Co., No. 1 Lompoc, Santa Barbara Co.	2- 6-34	1,040	hd. sd. drilling
Prairie Oil Co., No. 1 Lompoc, Santa Barbara Co.	....	....	material
Calif. Oil Prop., No. 1 San Marcos, Santa Barbara Co.	3- 4-28	4,040	to abandon
Carey, A., No. 1 Goleta, Santa Barbara Co.	1- 4-28	2,880	sd. sh. drilling
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas well—idle
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	4,200	sd. sh. drilling
General Pet., No. 1 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,025	suspended
General Pet., No. 2 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,360	suspended
General Pet., No. 3 Goleta Tideland, Santa Barbara Co.	21- 4-28	975	sd. sh. drilling
General Pet., No. 4 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,035	suspended
General Pet., No. 5 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,040	suspended
U. S. Pet., No. 1 Goleta Tideland, Santa Barbara Co.	20- 4-28	501	sd. sh. drilling
U. S. Pet., No. 2 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,032	suspended
U. S. Pet., No. 3 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,019	suspended
Macmillan Pet., No. 1 Goleta Tideland, Santa Barbara Co.	21- 4-28	175	suspended
Standard, No. 2 Goleta, Santa Barbara Co.	X- 4-29	2,750	br. sh. drilling
General Pet., No. 3 Capitan, Santa Barbara Co.	4- 4-30	1,603	to test
Oakburn Oil Co., No. 1 Capitan, Santa Barbara Co.	4- 4-30	370	suspended
Oakburn Oil Co., No. 2 Capitan, Santa Barbara Co.	4- 4-30	200	cemented
Oakburn Oil Co., No. 3 Capitan, Santa Barbara Co.	5- 4-30	1,000	sd. sh. drilling
Oakburn Oil Co., No. 4 Capitan, Santa Barbara Co.	4- 4-30	300	sd. sh. drilling
Oakburn Oil Co., No. 5 Capitan, Santa Barbara Co.	4- 4-30	326	suspended
Oakburn Oil Co., No. 6 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Indian Pet., No. 1 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building rig
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	4,260	will test
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Shell, No. 1 Summerland, Santa Barbara Co.	18- 4-25	2,275	sd. sh. drilling
Standard, No. 1 Casitas, Santa Barbara Co.	26- 4-25	1,211	sd. sh. drilling
Continental, No. 1 Carpenteria, Santa Barbara Co.	33- 4-25	4,130	gas well—idle
Continental, Tideland permit No. 121, Santa Barbara Co.	33- 4-25	55	suspended
Continental, Tideland permit No. 122, Santa Barbara Co.	33- 4-25	158	suspended
Continental, Tideland permit No. 123, Santa Barbara Co.	33- 4-25	125	suspended
Continental, Tideland permit No. 124, Santa Barbara Co.	33- 4-25	495	sd. sh. drilling
Continental, Tideland permit No. 124-A, Santa Barbara Co.	33- 4-25	92	cemented
Continental, Tideland permit No. 125, Santa Barbara Co.	33- 4-25	120	suspended
Continental, Tideland permit No. 126, Santa Barbara Co.	33- 4-25	200	suspended
Continental, Tideland permit No. 127, Santa Barbara Co.	33- 4-25	145	suspended
Continental, Tideland permit No. 128, Santa Barbara Co.	33- 4-25	98	suspended
Continental, Tideland permit No. 129, Santa Barbara Co.	33- 4-25	97	suspended
Getty, George F., No. 1 Carpenteria, Santa Barbara Co.	32- 4-25	68	cemented
Getty, George F., No. 2 Carpenteria, Santa Barbara Co.	32- 4-25	55	cemented
Shell, No. 1 Somis, Ventura Co.	23- 2-20	350	sd. drilling
Standard, No. 5-9 Saticoy, Ventura Co.	10- 2-22	8,460	redrilling
Bolsa Chica, No. 1-A Temescal, Ventura Co.	4- 4-18	1,750	br. sh. drilling
Fennell, E. A., No. 1 Piru, Ventura Co.	13- 4-19	1,020	sd. sh. drilling
Associated, No. 1 Rincon, Ventura Co.	19- 4-24	610	sd. sh. drilling
Continental, No. 3 Sulphur Mountain, Ventura Co.	21- 4-22	6,226	testing
Lockwood Oil Co., Well No. 1, Ventura Co.	28- 8-21	682	suspended
Milham Expltn., No. 9 Buttonwillow, Kern Co.	8-28-23	4,990	cleaning out
General Pet., No. 1 Buttonwillow, Kern Co.	6-28-23	....	location
Lincoln Drlg. Co., No. 1 Buttonwillow, Kern Co.	17-29-24	135	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	mtl.	building rig
Elmer Oil Co., No. 1 Bena, Kern Co.	15-30-30	3,800	suspended
Elmer Oil Co., No. 1-A Rosedale, Kern Co.	33-29-26	5,262	suspended
The Texas Company, No. 1 Edison, Kern Co.	23-29-29	5,660	hd. sd. drilling
Shell, No. 1 Edison, Kern Co.	33-29-29	1,000	hd. sd. drilling
Symark Oil Co., No. 1 Edison, Kern Co.	24-29-29	2,130	suspended
Sayre, F. M., No. 1 Edison, Kern Co.	5-30-29	3,370	sd. sh. drilling
McVey, Max, No. 1 Jasmine, Kern Co.	23-25-27	rig	suspended
Mallery Willard, No. 1 San Emidio, Kern Co.	9-10-23	550	suspended
Bardeen, H. H., No. 1 San Emidio, Kern Co.	10-10-23	....	location
Currency Pet. Co., No. 1 Jacalitos, Fresno Co.	28-21-14	3,380	hd. sd. drilling
Knudsen, John, No. 1 Jacalitos, Fresno Co.	14-21-14	1,490	suspended
Rio Grande Oil Co., No. 1 Kerman, Fresno Co.	14-13-17	5,000	abandoned
Petroleum Securities, No. 2 Huron, Fresno Co.	28-20-16	7,390	suspended
Western Gulf, No. 1 Penoche Valley, Fresno Co.	26-15-12	966	br. sh. drilling
Union, No. 1 Huasna, San Luis Obispo Co.	24-32-15	4,158	abandoning
Union, No. 1 North Huasna, San Luis Obispo Co.	12-32-14	5,350	br. sh. drilling
Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co.	34-31-15	3,475	gr. sd. drilling
Panorama Oil Co., Well No. 1, San Luis Obispo Co.	7-31-21	4,019	fishing
Paso Robles Synd., No. 1 Creston, San Luis Obispo Co.	27-27-11	3,742	suspended
Latin-American, No. 1 Shandon, San Luis Obispo Co.	31-27-15	4,160	suspended
Chessher, H. B., No. 1 Dudley, Monterey Co.	8-22- 9	245	suspended
Union, No. 1 King City, Monterey Co.	8-22- 8	2,788	cleaning out
Standard, No. 1 King City, Monterey Co.	23-22- 7	3,580	hd. sd. drilling
Pacific Inland Oil Co., No. 1 Parkfield, Monterey Co.	19-23-15	781	redrilling
Penn Western, No. 1 Tulare Lake, Kings Co.	24-21-18	1,338	suspended
Wellport Oil Co., No. 1 Devils Den, Kings Co.	9-24-17	2,694	br. sh. drilling
Oceanside Oil Co., No. 1 Kreyenhagen, Kings Co.	32-22-16	300	suspended
Twin State Oil Co., No. 1 Soldani, Mendocino Co.	14-12- 7	2,060	sd. sh. drilling
Barnhart Trust, No. 1 Oakdale, San Joaquin Co.	3- 2-10	2,550	suspended
Inland Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,030	suspended
White, Roy, No. 1 Pixley, Tulare Co.	8-23-26	3,550	hd. sd. drilling
Terminal Oil Co., No. 1 Tulare, Tulare Co.	29-20-25	4,198	suspended
Terra Bella Oil Co., No. 1 Porterville, Tulare Co.	35-22-27	900	sd. sh. drilling

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Simmel, L. G., No. 1 Inglewood, Los Angeles Co.	21- 2-14	5,000	sd. sh. drilling
Raleigh Oil Co., No. 1 Malibu, Los Angeles Co.	1- 2-19	3,816	sd. sh. drilling
Clearwater Oil Co., No. 1 Bellflower, Los Angeles Co.	21- 3-12	4,550	gr. sd. drilling
Getty, George F., No. 1 Riviera, Los Angeles Co.	27- 2-12	3,890	hd. sd. drilling
Burlingham Pet., No. 1 Compton, Los Angeles Co.	17- 3-13	2,680	suspended
Diller, W., No. 1 Watts, Los Angeles Co.	8- 3-17	3,950	sd. sh. drilling
Calif. Well Drlg. Co., No. 1 Compton, Los Angeles Co.	11- 4-13	8,500	suspended
Archer Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	5,557	fishing
Harbor Oil Co., No. 1 Wilmington, Los Angeles Co.	18- 4-13	rig	suspended
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Rucker, R. C., No. 1 Puente, Los Angeles Co.	27- 2-10	3,275	cleaning out
The State Co., No. 1 Puente, Los Angeles Co.	5- 2-10	4,200	gr. sd. drilling
Sherman, J. W., No. 1 Puente, Los Angeles Co.	33- 2- 8	850	sd. sh. drilling
Keck & Hall, No. 1 Puente, Los Angeles Co.	32- 2- 8	1,130	gas well
Urmi Oil Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	1,520	hd. sd. drilling
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	1,804	hd. sd. drilling
Coastline, No. 1 Devils Canyon, Los Angeles Co.	21- 5-17	2,542	plug 2,100 ft.
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	1,550	sd. sh. drilling
Martin, J. W., No. 1 Newhall, Los Angeles Co.	22- 1-17	1,120	sd. sh. drilling
Consolidated Oil Co., No. 1 Newhall, Los Angeles Co.	8- 3-16	1,555	cemented
National Sec., No. 1 Newhall, Los Angeles Co.	1- 3-16	874	suspended
Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co.	1- 3-16	900	suspended
Pioneer Pet., No. 1 Newhall, Los Angeles Co.	14- 3-16	rig	rigging up
Union, No. 1 Coyote, Sansinena, Los Angeles Co.	30- 2-10	2,105	redrilling
Tureco Oil Co., No. 1 Whittier, Los Angeles Co.	29- 2-11	....	location
Beard, G. F., No. 1 Brea Canyon, Los Angeles Co.	30- 2- 9	1,099	suspended
Western Gulf, No. 1 Brea Canyon, Los Angeles Co.	28- 2- 9	2,860	br. sh. drilling
Standard, No. 1 Bastanchury, Coyote, Orange Co.	21- 3-10	4,215	sd. sh. drilling
Shell, No. 1 Bastanchury, Coyote, Orange Co.	28- 3-10	6,050	redrilling
Union Oil Co., No. 1 Richfield, Orange Co.	13- 3- 9	2,800	granite
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Oil Well Eng. Co., No. 1 Newport, Orange Co.	21- 6-10	2,795	suspended
Fidelity Pet. Co., No. 1-A Murrietta, Riverside Co.	23- 7- 3	701	cleaning out
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,550	bl. sh. drilling
Imperial Valley Oil Co., Well No. 1, Imperial Co.	32-11-10	2,980	suspended
San Marcos Oil Co., Well No. 1, San Diego Co.	9-12- 3	mtl.	building rig
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	2,170	suspended
McGregor Synd., No. 1 Del Mar, San Diego Co.	17-14- 3	1,215	sd. sh. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,200	sd. sh. drilling
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	550	cleaning out
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,525	cleaning out
Duncan, N. L., No. 1 Mojave, San Bernardino Co.	8- 4- 6	rig	rigging up
Girard & Grimes, No. 1 Corona, San Bernardino Co.	8- 2- 8	450	sd. sh. drilling

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And better still, it prevents the loss of the lighter fractions, thereby maintaining the crude at well-head gravity. You know what that means—a better price for your crude!

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Cooper-Bessemer Vertical gas engines are built in three bores and strokes. FIRST . . . 11 1-2 x 14" in 2, 3 or 4 cylinders from 75 to 200 B. H. P. (This engine is convertible from gas to diesel . . . or vice versa. The cylinders are cast enbloc with removable liners.) SECOND . . . 14 3-4 x 16" in 3, 4 or 6 cylinders from 165 to 415 B. H. P. THIRD . . . 18 x 20" stroke in 3, 4, 5 or 6 cylinders from 280 to 565 B. H. P. *Write for new Bulletin* . . . "COOPER-BESSEMER VERTICAL GAS ENGINES."

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MOUNT VERNON, OHIO GROVE CITY, PENNSYLVANIA

BRANCH OFFICES IN ALL PRINCIPAL OIL AND GAS FIELDS

Better Than Usual Wells in the East

Tuscarawas County Has Good Niagara Lime Wells and Muskingum County Is Very Active. Good Well in West Virginia

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Feb. 17.—The week of development work in the Eastern fields during the past week was fairly fruitful of good producers. As usual the deep sand territory in Southeast Ohio furnished nearly all of the large wells. Tuscarawas County is completing some Niagara lime wells of a size to attract attention. The Niagara lime is not a reliable producing formation. It may be found more regular in Tuscarawas than Guernsey County.

West Virginia continues to complete more gas wells than oil producers. With one exception all late completions are gas wells, located mostly in Boone and Lincoln Counties. There is considerable work under way and starting in West Virginia, but no incentive to start a good deal of work at this time. Operators will wait until spring and then go back to the old fields and drill additional wells where there is still room for a large amount of work in light territory.

SOUTHEAST OHIO

In the southwest quarter of Section 3, Hopewell Township, Muskingum County, the Hopewell Fuel & Gas Co. completed and shot in the Clinton sand a test on the J. M. Sidle farm. It produced 60 bbls. the first 24 hours and 225 bbls. the second 12 hours. This is the largest well completed in a number of months.

In the northwest quarter of Section 3, Clay district, Muskingum County, McClay Brothers & Co. completed a test on Calhoon-Gordon farm. It produced 110 bbls. the first 24 hours after completed and shot in the Clinton sand. In the same locality, same township and county, Crowley, Carr and others completed and shot in the Clinton sand a test on the George McDonald farm. It produced 155 bbls. the first 24 hours.

In the northwest quarter of Section 13, Sutton Township, Meigs County, the Twenty-Five Association, Inc., has completed a second test on the Stanley Holter farm. It is a duster in the Cow Run sand. In the same township and county, Delbert Bachelor has started to drill on the J. and W. Arnett farm. In the same section, the Southeastern Ohio Petroleum Co. has shut down at 1,610 feet on the Harry Potts farm. Smith & Watterson have a duster at a second test on the A. E. Carnahan farm.

Muskingum County is coming to the front with the largest wells and operations are increasing. In the northwest quarter of Section 3, Clay Township, William Cline and others completed and shot their second test on the Robison Ramsbottom farm. It produced 155 bbls. the first 24 hours. In Section 6, Jackson Township, the Pure Oil Co. completed and shot No. 4 on the Lloyd McKee farm. It flowed 150 bbls. the first 24 hours after shot.

In Section 1, Hanover Township, Licking County, the Pure Oil Co. completed No. 5 on the R. L. Shoemaker farm. It produced 40 bbls. the first 24 hours. In Section 15, Richland Township, the East Ohio Gas Co.'s test on the Alonzo Ducy farm is a gasser in the Clinton sand good for 2,500,000 feet.

Good Producer in Licking

In Section 13, Fallsbury Township, Licking County, the Preston Oil Co. completed and shot in the Clinton sand a test on the Wallace Davidson farm. It produced 220 bbls. the first 24 hours and flowed 75 bbls. the second 24 hours.

In the southwest quarter of Section 3, Clay Township, Muskingum County, William Cline and others completed in the Clinton sand No. 3 on the Robison Ramsbottom farm. It produced 75 bbls. the first 24 hours. At Bolins Mill, Knox Township, Vinton County, the Conservation Oil Co. has a light pumper on the Robert Nelson farm.

Tuscarawas County

The latest completion in Tuscarawas County is the Gordon Oil Co.'s test on the Thomas Shearer farm. It is a natural producer and placed 100 bbls. to its credit the first 24 hours.

In the northeast quarter of Section 1, Harrison Township, Perry County, McClay Brothers and others have completed a test on the Faye Melick farm. It produced 50 bbls. the first 24 hours after completed and shot in the Clinton sand. In the southwest quarter of Section 12, Reading Township, the Preston Oil Co. completed and shot in the same formation a second test on the S. H. Saffell farm. It is a 20-bbl. pumper.

In Center district, Monroe County, the Henry Oil Co. is drilling on the Henry Friday farm. In Section 12, Reading Township, Perry County, the Preston Oil Co. is drilling a second test on the S. H. Saffell farm. In the same township, Section 20, the Planet Oil Co. and others have a rig up on the David Petty farm. In Section 4, Harrison Township, the Ohio Fuel Gas Co. is drilling on the Orley Moore farm. In Newton Township, Wallsmith & Watson are drilling on the John Spring farm. In Clay Township, Adair, Lynch & Co. are due in the sand on the Howard Tewkesbury farm.

WEST VIRGINIA

In Henry district, Clay County, the Virginian Gasoline & Oil Co. has drilled a test on the Mary D. Hanshaw farm into the Big lime formation. It flowed at the rate of 120 bbls. the first 24 hours. This is an exceptionally good well for West Virginia and the best completed in many months.

In Sherman district, Calhoun County, the Virginian Gasoline & Oil Co. completed in the Big Injun sand a test on the Everet Proudfoot farm. It is a 5-bbl. pumper. In Troy district, Gilmer County, the Hope Construction & Refining Co.'s No. 1,143 is a gasser in the Gamtz sand.

In Scott district, Boone County, the Mountain State Fuel Co. has a gasser on the M. E. Holeston farm. The same company's test on the Hill-Prichard farm is a gasser in the Berea grit. The Cameron Oil & Gas Co.'s No. 10, on the George P. Alderson farm, is a gasser.

In Union district, Lincoln County, the Allegheny Gas Co. has a gasser on the Otis Bias farm. In Sheridan district, the Empire State Gas Co. has a gasser at No. 10 on the Jessie Courts farm.

In Geary district, Roane County, I. L. Short & Co. have a gasser in the Big Injun sand on the D. S. Farr farm. In Smithfield district, same county, the United Fuel Gas Co.'s No. 4,074, on the D. H. Harless farm, is a gasser in the same formation. In Center district, Calhoun County, the Hope Natural Gas Co. has a gasser at No. 7,433 on the Peter Johnson farm.

The South Penn Oil Co. completed No. 13 on the Kate H. Nixon farm, in Geary district, Roane County, estimated good for 10 bbls. a day in the Big Injun sand. The location is 650 feet northwest of No. 2 on the same farm.

Jackson County

In a number of districts there is test work starting or under way. In Grant district, Jackson County, J. H. Starr & Co. have started to drill on the J. H. Starr farm. In Ravenwood district, Edward Hess & Co. are drilling on the Arthur S. Gray farm. In Sherman district, Calhoun County, the MidPenn Oil Co. is rigging up on the Charles Poling farm. In Center district, W. H. Bickel has rigged up on the Jasper Elliott farm.

Near Mole Hill, Clay district, Ritchie County, the Fox Farm Oil & Gas Co. completed in the Big Injun sand a second test on the George Darnell farm. It is a duster. In Henry district, Clay County, the Thompson Gas Co. has a gasser in the Big Injun sand at No. 21 on the Caldwell heirs farm. In Pleasant district, the M. Edward Co. has a duster on the J. A. Jones farm.

In Scott district, Putnam County, Arbaugh & Henley completed a gasser in the Salt sand on the C. G. Beckett farm. In the same district, the Sowders Oil & Gas Co.'s second test on the Pine-Moore farm is a gasser. In the same district, the Putnam Oil & Gas Co. has a gasser on the Amelia Racer farm.

In Harvey district, Mingo County, Frank H. Yates has a gasser in the Maxon sand at a second test on the Workman-Cowden farm.

Wildcat Gassers

In Swell Mountain district, Raleigh County, the Glade Oil & Gas Co.'s test on the G. T. and W. T. Trayer farm is a gasser in the Berea grit. In Lewis district, Mason County, the Bell Oil & Gas Co. has a gasser on the W. H. Hatson farm.

On Rush Run, Smithfield district, Roane County, Frederick Knopp and others has completed a test on the A. T. Ferrell farm. It is a gasser in the Big Injun sand good for 500,000 feet.

In Union district, Clay County, south of No. 2 on the Connell heirs farm, the Chalmers Oil & Gas Co. completed and shot in the Big Injun sand No. 5 on the same farm. It is a 3-bbl. pumper.

Roane County

On Rush Run, Smithfield district, Roane County, the United Fuel Gas Co. completed in the Big Injun sand its test on the D. H. Harless farm. It is a gasser good for 500,000 feet. In the same district, the Hardly Able Oil & Gas Co.'s test on the T. F. Nichols farm is a light gasser in the same formation.

In Curtis district, the United Fuel Gas Co. is drilling on the M. Hart farm. In Reedy district, Roane County, the Hope Construction & Refining Co.'s second test on the L. Vandal farm is a 10-bbl. pumper in the Berea grit. In Reedy district, Wirt County, the same company has a rig up on the Leander Vandal farm.

In Henry district, Clay County, the United Fuel Gas Co. is due in the sand on the Mary D. Henshaw farm. In Sherman district, Calhoun County, the Virginian Gasoline & Oil Co. is due in the sand at another test on the Everet Proudfoot farm. In Lee district, the United Fuel Gas Co. has a rig up on the Carr Shafer farm. In Sheridan district, Ira Haught and others are drilling on the Alva Elder farm. In Center district, W. H. Bickel has a duster on the C. B. Bailous farm. In Lee district, the same party has a gasser and a show of oil in the Big Injun sand on the Ira Bryner farm.

In Reedy district, Roane County, E. R. Lester and others are due in the sand on the O'Hara estate. In Washington district, Kanawha County, the Cambridge Gas Co. has drilled to a depth of 2,200 feet on the Walter Tompkins farm, and shut down. In Elk district, the United Fuel Gas Co. has a rig up for No. 3,966 on the Numa Black Coal Co.'s property.

On Crane Run, Cove district, Gilmer County, the Hope Construction & Refining Co. completed in the Gantz sand No. 3 on the G. W. Simons farm. It is showing for a 12-bbl. pumper. In Paw Paw district, Marion County, the Carnegie Natural Gas Co. has a gasser at a second test on the J. and Charlotte Price farm.

Kanawha County

In Malden district, Kanawha County, the Owens Bottle & Machine Co. has a Big Injun sand gasser at No. 10 on the L. A. Myers farm. In Cabin Creek district, the United Fuel Gas Co.'s Nos. 3,933 and 3,977 on the Sunday Creek Coal Co.'s tract, are gassers in the Big Injun sand. In Elk district, the same company's No. 3,966 on the Numa Black Coal Co.'s property is a gasser in the same formation. In Poco district, Louis Trevillini has a duster in the Berea grit at a second test on the Poco Land Co.'s tract.

In Crook district, Boone County, Godfrey L. Cabot has a gasser in the Berea grit at No. 6 on the Y. & O. Coal Co.'s property. In Scott district, the Sayers Oil & Gas Co. has a duster at No. 3 on the Skinner-Zirkle farm. In Henry district, Clay County, the Virginian Gasoline & Oil Co. has a gasser in the Big Injun sand at No. 4,048 on the P. C. and L. J. Reed farm.

Lincoln County

In Duval district, Lincoln County, the Guyan Oil Co. is drilling on the Lincoln Land Association's property. In Jefferson district, the United Fuel Gas Co. has a rig up on the Horse Creek Land & Mining Co.'s tract. In Crook district, Boone County, the Martha Oil & Gas Co. is drilling on the B. L. Priest farm. In Peytonia district, the Owens Bottle & Machine Co. has started to drill on the Safe Deposit & Trust Co.'s property. The same company is fishing on the Casingham & Co.'s property. In Cabin Creek district, Kanawha County, the Pure Oil Co. has started to drill on the Williams Coal Co. farm.

In Lee district, Calhoun County, the Hope Construction & Refining Co. is drilling deeper its test on the Lesle D. Mace farm. In Harvey district, Mingo County, the Two Way Oil & Gas Co. completed the rig for a second test on the C. C. Messer farm. In the same district, the Red Jacket Oil & Gas Co. has the rig completed for No. 12 on the Red Jacket Consolidated Coal & Coke Co.'s property.

In Grant district, Wetzel County, the Shimwell Oil & Gas Co. has been fishing at intervals for more than a year on the W. J. Price farm. In McClellan district, Doddridge County, the Conservative Gas Co. has had rig timbers at a location on the Dora McDonald farm for several months. In the same district, the Skeleton Oil & Gas Co. is fishing at 2,818 feet on the A. F. M. Lyons farm. In Ten Mile district, Harrison County, J. R. R. Dennison is drilling at 2,875 feet at a second test on the Allen Varner heirs farm.

In Sheridan district, Calhoun County, the Conservative Gas Co. and the Riddle Oil & Gas Co. has rigs up on the Charles Morris and the William Phillips farms. The Richter Oil Co. has rigs up on the James Kirby and E. S. Raybuck farms. In DeKalb district, Gilmer County, the White Pine Oil & Gas Co. has started to drill on the H. A. Gainer farm. In the same district, F. G. Davis & Co. are rigging up on the Alva J. Hardman farm. In Murphy district, Ritchie County, Davis & Bickerstaff are shut down on the Claude Childers farm.

Boone County

In Scott district, Boone County, the Owens Bottle & Machine Co. has a rig up on the Wheeler heirs farm. In Barboursville district, Cabell County, the United Fuel Gas Co. has a rig completed on the A. A. Stollings farm. In

(Continued on Page 168)

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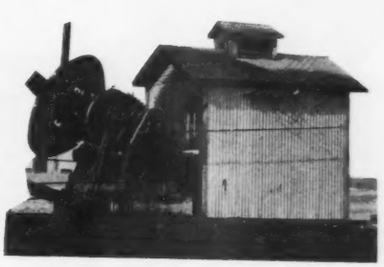

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Keeps Hole Straighter

Relieves Vibration

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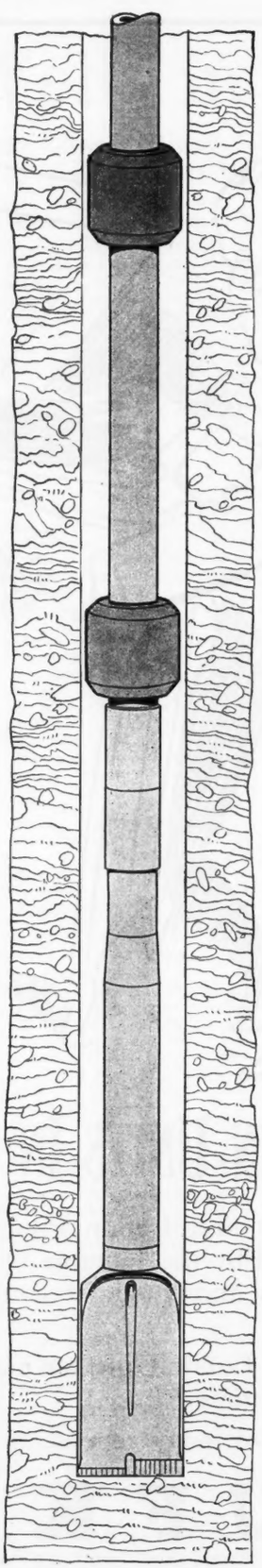
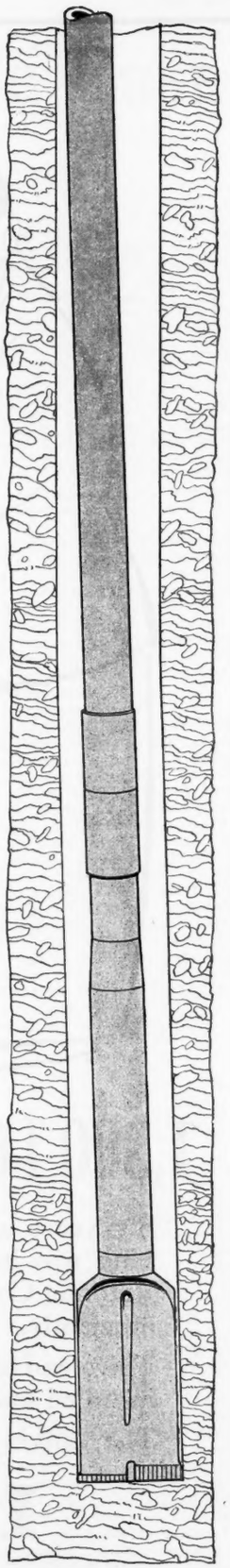
Group photograph of various Bettis Products. The smaller rubbers are the 5" Bettis Protectors. The Medium size are 12" Bettis Drill Stabilizers. The largest size is of Bettis Core Barrel Guide.

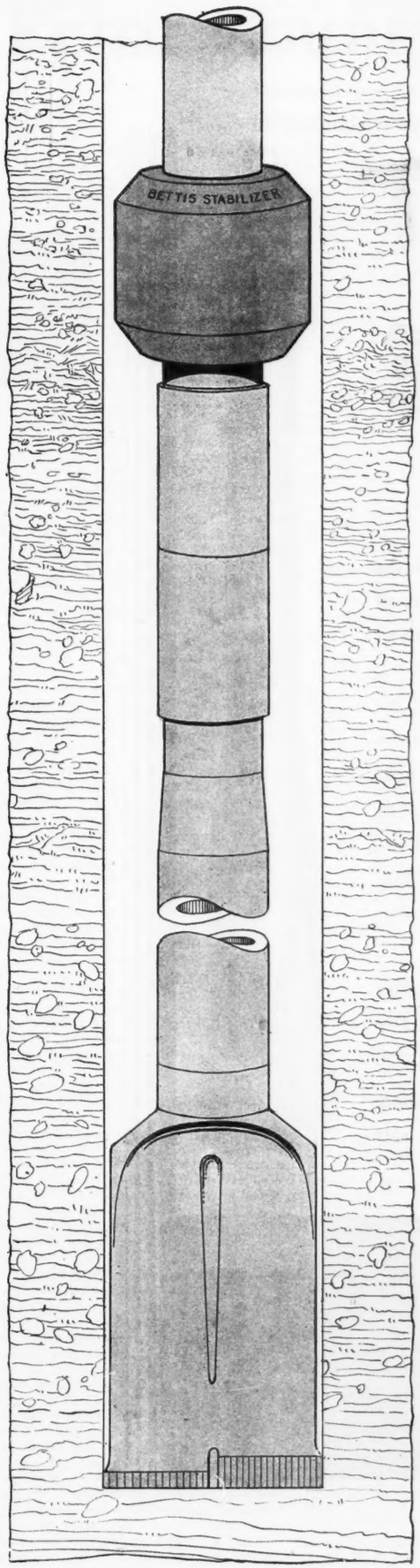


Drill Stem showing two Bettis Drill Stabilizers in place, preventing wobble and excessive vibration of the drill and string.



Illustrating a drill string without Bettis Stabilizer, encouraging twist-offs and crooked hole.

Best bet yet!"



Illustrating Bettis Drill Stabilizer in position immediately above the collar.

BETTIS DRILL STABILIZERS

The greatest whip in the drilling string occurs just above the drill collar. The vibration and corkscrewing of the string in open hole is a principal cause of twist-offs and crooked hole. To overcome this problem and to offer support to the string so that it will retain its vertical position, Bettis Drill Stabilizers were designed. They have won the immediate acceptance of hundreds of drillers.

These Stabilizers are identical to Bettis Protectors in quality and design—simply larger in size to pass through casing ranging from 9⅝″ to 20″ inside diameter. The size mostly preferred is 10″ O.D. to fit 6″ drill pipe.

Bettis Drill Stabilizers are installed just like Bettis Protectors They should be used in open hole from the bottom of the casing to the top of the drill but the vital place is on the drill stem and first stand of pipe where the greatest "hinging" occurs.

Companions of Bettis Protectors

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Ector County Most Interesting Area

Seventeen Operations in Penn Pool and Five Producers Pinched In for Lack of Outlet. Andrews and Gaines Tests

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Feb. 17.—Ector County remains the most interesting area in the Permian Basin, with 17 operations under way in the Penn Pool, and 5 producers pinched in for want of more pipe line outlet, which will soon be furnished by connections to two main lines running several miles north and south of the pool, and one connection to a line in the Hendricks Pool, Winkler County.

The Independent Oil & Gas Co. and Tidal Oil Co. have pooled several hundred acres for a test in the SW cor. of an 84-acre tract north of the T.&P. Railroad, about 1¼ miles north of Cosden Oil Co.'s No. 1-A University, in the Penn Pool, but will not drill the location until a later date. This is a most interesting location and many will watch the test closely for it is practically proven that the pool will run to the north, and larger wells are expected on the acreage in that direction.

Cosden Oil Co.'s No. 1-A University in Section 1, the producer farthest north in the pool at the present time, is now the best well, producing 665 bbls. in 24 hours ending at 7 a.m. February 17 on a seven-thirty-seconds-inch choke. Total depth of the well is 3,760 feet. Top of the pay is 3,596 feet.

Possibility of Proration

So far the Penn Pool's drilling and production has been confined to the eastern side of the University sections, and this will probably continue for some time, for if locations are made on the western side of these sections many offsets will have to be staked on the much cut up sections to the west, and the pool will be out of control, probably bringing up the problem of proration for another pool in the Permian Basin.

The Landreth Production Co. has contracted to sell some of its Penn Pool production to the Burford Oil Co., the latter company to transport the same through its 4-inch line via the Hendricks Pool to its refinery at Pecos City. This connecting line is expected to be completed the latter part of this month and ready to test. Other producing companies in the pool may also sell some production to the Burford Oil Co.

An interesting test 1 mile southeast of production in the Penn Pool is being drilled by the Llano Oil Co. on the Hogan ranch in the NW cor. of Section 18, Block 44. It is now drilling at 3,090 feet in salt and anhydrite, and should prove in a couple of days whether or not production will run in this direction from the pool.

In Andrews and Gaines

Andrews and Gaines Counties are both interesting at the present time, and another test is reported for Andrews to help make that area still more so. This location will probably be staked in Section 20, Block A-37, on a direct line between Deep Rock Oil Co.'s No. 1 Ogden in Section 6, Block A-46, and the Louisiana Oil & Refining Co.'s No. 1 Ralph in Section 7, Block A-28, in Gaines County. This latter test had a slight showing of oil at 4,351 feet two weeks ago but is shut down at present at a total depth of 4,495 feet. The contract depth is 4,500 feet and the test will probably be abandoned at this depth unless companies owning offset acreage decide to finance deeper drilling. R. R. Penn of Dallas will drill the new test on acreage blocked by the Humble Oil & Refining Co., and in which Penn has acquired a one-third interest for the drilling of the test. Penn and Humble seem to be a lucky combination in West Texas and may be the finders of another field in this part of the basin.

Midland County Test

Another interesting test has been reported as having been made by the Pure Oil Co. on a large block in Midland County, to be located in Section 14, Block 38, Township 4s, T.&P. Survey, on a geophysical "high." The leases on this block are about to expire; therefore the company has decided to make a test. The block is comprised of the following acreage: Sections 40 to 46 inclusive, Block 37, Township 3s; E half and SW, Section 2; S half, Section 4; all of Sections 5, 6, 7, 8, 9, 10, 15, 17, 18 and all of Section 16 except the southwest quarter; all of Sections 30 and 31, Block 37, Township 4s; all of Sections 38 and 40, Block 38, Township 3s; Sections 1, 2, 3, and 4; all of Section 8 except the northwest quarter of the northwest quarter; all of Sections 9, 10, 11, 12, 13 and 14; all of Section 15 except the southwest quarter; all of Sections 16, 22, 23, and 24; and the S half of Section 21, Block 38, Township 4s. Midland County has had but a few tests, therefore this test, located on such a large block of acreage, will be an interesting one for this part of the West Texas district.

The Wheat Field of Loving County encountered its first shallow production this week when Lockhart & Co. topped a pay at 2,305 feet in its No. 5 Hubbard, a test in the heart of the field, and shut the well down at 2,308 feet when it made a 30-minute head estimated good for 30 bbls. This well is 1,650 feet from the northeast and 330 feet from the northwest lines of Section 83, Block 33, H.&T.C. Survey, and if this shallow pay does not yield a larger amount of production than is showing at present, it will no doubt be carried down to the regular 4,200-foot pay which produces sweet oil of 42 gravity.

WEST TEXAS PRODUCTION
Week ending February 15

County—	Wells	Prod.
Crane County	331	36,440
Crockett County	46	1,615
Fisher County	7	1,215
Ector County	6	1,015
Garza County	5	50
Glasscock and Howard	482	38,325
Jones County	73	2,180
Loving County	18	1,150
Mitchell County	143	2,440
Pecos County	405	138,285
Reagan County	253	17,035
Runnels County	3	15
Scurry County	5	20
Upton County	251	8,855
Ward County	23	1,690
Winkler County	608	88,840
Total this week	2,659	339,210
Total last week	2,646	342,540
Difference	13	3,330

Seepage Oil in Yates

Seepage oil is an interesting feature of the Yates Pool, Pecos County, and it may interest many to know that a total of 1,639,450 bbls. of such oil was recovered in the pool in 1929, the Continental Oil Co., Mid-Kansas-Transcontinental Oil Co., and Grayburg Oil Co. being the three companies which have shallow wells and drainage ditches for use in recovering the oil. The first company gathered 1,415,090 bbls. of the above amount, the Mid-Kansas and Transcontinental collected 156,107 bbls. and Grayburg recovered 269,594 bbls. During January the Continental Oil Co. recovered 3,810 bbls., Mid-Kansas and Transcontinental collected 368 bbls., and Grayburg recovered 138 bbls. This seepage oil is not considered in figuring out the potential and proration figures for the field.

Going back to the Penn Pool in Ector County, it may be interesting to note that Humble, Penn, and Atlantic Oil Producing Co.'s No. 1 York, in Section 16, Block 44, Township 3s, the second well to be completed in the pool, is making around 5 bbls. of salt water per day, the well being pinched to around 100 bbls. daily since its completion. It is not known just where the water is coming from, but believed to be from the bottom, and a plug may be driven down in an effort to shut off the water. Total depth of this well is 3,744 feet.

Texon Oil & Land Co.'s No. 1-B University set another gas peak and an oil peak this week when the latter went to 3,008 bbls. and the gas gauged 27,877,000 feet on February 14.

WEST TEXAS COMPLETIONS
Week Ending February 15

Crane County

C. C. Duffey and others' No. 7 Cowden, located 1,320 feet from south and 1,420 feet from east of Section 18, Block X, C.C.S.D.&R.G.N.G.R.R. Survey, was drilled to a total depth of 2,501 feet, topped the pay at 2,340 feet, was shot with 500 quarts at 2,336-2,501 feet and had an initial production of 200 bbls. in 12 hours. Humble Oil & Refining Co.'s No. 1 University-Dowell-E, located 2,310 feet from north, 930 feet from east of Section 40, Block 30, University Land, was drilled to a total depth of 2,960 feet, topped the pay at 2,870 feet, was shot with 150 quarts at 2,875-2,950 feet and had an initial production of 395 bbls. first 24 hours.

Ector County

Cosden Oil Co.'s No. 1-C University, located 1,650 ft. south, 440 feet west NE cor. Section 2, Block 35, had an initial production of 1,707 bbls. at 3,678-3,686 feet and was pinched to 90 bbls. daily.

Glasscock County

Kirby Petroleum Corp.'s No. 3 Baker, located 1,650 feet from north, 330 feet from west of Section 23, Block 33, Township 2s, was drilled to a total depth of 2,275 feet, topped the pay at 2,164-74 feet, increased at 2,245-56 feet, proration test 960 bbls., allowable production 220 bbls.

Howard County

Pure Oil Co.'s No. 3 Hooks, located 2,440 feet south, 1,036 feet west of NE cor. of Section 140, Block 29, W.&N.W. R.R. Survey, topped the pay at 1,842 feet, was drilled to a total depth of 1,866 feet, was shot with 45 quarts at 1,838-58 feet and had an initial production of 35 bbls. Schermerhorn Oil Co.'s No. 2 Kloh, located 990 feet from south and west of Section 13, Block 33, Township 2s, topped the pay at 2,117 feet, was drilled to a total depth of 2,539 feet, proration test 2,160 bbls., allowance 496 bbls. Otis Chalk's No. 7 Chalk was shot with 300 quarts at 2,940-3,100 feet and had an initial production of 150 bbls.

Pecos County

Amerada Petroleum Corp.'s No. 1 University, located Section 13, Block 18, was drilled to a total depth of 1,733 feet, topped the pay at 1,698 feet, was plugged back to 1,731 feet and had an initial production of 25 bbls. first 12 hours, 10 per cent water. Arkansas Gas & Fuel Co.'s No. 1-A University, located Section 32, Block 16, was drilled to a total depth of 1,535 feet, topped the pay at 1,525 feet and had an initial production of 40 bbls. hourly. Bateman et al's No. 1 Cunningham, located Section 34, Block 11, was dry and abandoned at 1,691 feet. Buell & Hagan's No. 1 Byrne, located Section 54, Block 10, made 750,000 feet of gas at 1,325-1,400 feet. Cardinal Oil Co.'s No. 4 Torborg, located in Section 539, Arnold & Barrett Survey, had an initial production of 30 bbls. daily at 325-395 feet. Its No. 5 Torborg, in the same section and survey, had an initial production of 30 bbls. at 324-395 feet. Crosby Production & Royalty Co.'s No. 3

(Continued on Page 154)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended February 17

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Deep Rock Oil Co. et al's No. 1 Mathis, 990 ft. from S and W, Sec. 4, Blk. A-46, Public School Land	Bldg. rig.
Deep Rock's No. 1 Ogden, 2,310 ft. E, 330 ft. S, Sec. 6, Blk. A-46, Public School Land	Top pay 4,345 ft.; top lime 4,054 ft.; averaging 200 bbls. per day; total depth 4,428 ft.; est. 200 ft. water in hole 4,414-28 ft.
Deep Rock Oil Co. et al's No. 1 King, 330 ft. from N and 2,310 ft. from E, Sec. 11, School Blk. A-46	Rig completed.
BORDEN COUNTY	
Moncrief et al's No. 1 Munger, 1,980 ft. from N and E, Sec. 15, Blk. 31, Twp. 4-N, T.&P.R.R. Sur.	Fishing 2,700 ft.
Teas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur.	Top salt 1,080 ft.; shut down 2,540 ft.
BREWSTER COUNTY	
E. W. Bateman et al's No. 2 Nevill, 2,000 ft. S and W line of Sec. 62, Blk. 13, G.H.&S.A.R.R. Sur.	Drlg. 2,900 ft.
Brewster Oil Co's No. 1 Fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur.	Fishing 1,935 ft.
Forrest Oil Co.'s No. 1 Skinner, C SW SE, Sec. 100, Blk. 2, G.C.&S.F. Sur.	Shut down 1,032 ft.
Trans-Pecos O. & G. Co.'s No. 1 Jones, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.&S.F. R.R. Sur.	Shut down 1,720 ft.
Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk 352, 7 mi. S of Alpine	Shut down 1,740 ft.
COKE COUNTY	
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T. C. Sur., elev. 2,750 ft.	Shut down 2,892 ft.
Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor., Sec. 272, Blk. 1-A, H.&T.C. Sur.	Pay 3,755-56 ft.; plugging back to 3,755 ft. to shoot; total depth 4,255 ft.
CONCHO COUNTY	
Duffy et al's No. 1 Callan, 1,520 ft. N and 1,120 ft. W of SE cor., Sec. 21, Blk. 10, H.&T.C.R.R. Sur.	Spudded and shut down.
Turner et al's No. 1 Borsig, 150 ft. from S of SE cor., G. Emmig Sur. 130, 6 mi. W of Paint Rock	Shut down 735 ft.
CRANE COUNTY	
Simms and Atlantic's No. 1 University, 2,310 ft. from N, 990 ft. E, Sec. 39, Blk. 30, University Land	Top salt 1,070 ft.; drlg. 2,410 ft.
Warner-Quinian Co.'s No. 8 University, 990 ft. S and 330 ft. W of NE cor. of SW, Sec. 39, Blk. 30, University Land	Drlg. 500 ft.

(Continued on Page 118)

Carson Wildcat Flows 1,256 Barrels

Two Semiwildcat Producers in Cooke County. Jack County Has Another Deep Producer Opening New Territory

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Feb. 17.—Carson County continues to be the most interesting area in the Panhandle at the present time since the Empire Gas & Fuel Co.'s No. 1 Field, a rank wildcat west of White Deer, in Section 13, Block 7, I.&G.N. Survey, topped a granite wash pay at 3,200-05 feet with an increase at 3,220-32 feet, and was completed at the latter depth flowing 1,256 bbls. with 30 pounds rock pressure in 21 hours. It is now pinched in waiting for a pipe line which will probably be laid to a loading rack on the railroad about 3½ miles south. In the 24 hours ending at 7 a. m., February 17, the well flowed 184 bbls. (pinched). The Empire Gas & Fuel Co. holds several sections in the immediate vicinity of the discovery. The nearest production is in the Roxana Pool, 11 miles northeast. Offset tests will no doubt be started immediately.

Cooke County Semiwildcats

In Cooke County Ratford and others' No. 1 J. G. Jones in the J. J. Arocha Survey, Abstract No. 20, is offering a semiwildcat producer at a total depth of 1,712 feet. An oil sand was encountered at 1,700-04 feet and the test bailed to 1,000 feet off bottom, the owners being unable to bail to the bottom. Later it was swabbed to 500 feet of bottom, and is now shut down.

Another semiwildcat in this county is Kewanee Oil & Gas Co.'s No. 1 Montgomery, in the southeast part of the J. B. McClyman Survey, Abstract No. 735. It topped a broken sand and lime at 1,186-1,201 feet, and made 35 bbls. of oil and 12 bbls. of water in the first 24 hours after shutting down.

The Tarver Pool in Foard County added another small producer to its list this week when Shell Petroleum Corp.'s No. 1-B Tarver, 660 feet from the east and 220 feet from the south of the east 40 acres of the west 80 acres of the north 160 acres of the south 320 acres of Section 3, G.C.&S.F. Survey, topped the pay at 1,993 feet and was shut down at 2,043 feet. It pumped and flowed 79 bbls. of oil and 8 bbls. of water on a 24-hour gauge, ending February 13, the first day on production.

Deep Producer in Jack

Jack County has another deep producer in the Prairie Oil & Gas Co.'s No. 1 W. B. Munson, 2,394 feet from the north and 330 feet from the west of Section 3, B.S.&F. Survey. It topped the deep pay at 4,685 feet and tested 87 bbls. on a one-hour test, and at a total depth of 4,702 feet flowed 168 bbls. per day of 40.5 gravity oil. Six and five-eighths-inch casing was set at 4,691 feet. This well is east of the Buttram Pool which produces from pay found around 2,400-2,500 feet. The deep discovery opens up much territory to deep production. The Texas Company has a deep producer on its Shanafelt lease in the Bryson Pool, and this deep pay horizon may be found in various areas over the county, at least it will call for more deep tests in an effort to pick up the deep pay, and if wildcats fail to register production from the shallower sands they may be drilled down seeking the lower strata for production.

The States Oil Co.'s No. 1 Ross in the C NE NE, Section 98, B.B.B.&C. Survey, drilled 9 feet more into the lower Tannehill sand making the present total depth of the well 1,267 feet. The water was shut off and a gas test made by the Lone Star Gas Co., the well gauging 3,445,000 feet with 340 pounds rock pressure. This well is 1½ miles southwest of production on the Jackson farm and will force more drilling between this gasser and the oil producers to the northeast, possibly making up a small pool in this area, extending to the southwest.

The Homaokla Oil Co.'s No. 1 Sealy-Hutchins in the NW cor., Section 59, G.H.&H. Survey, topped a gas sand at 2,840-48 feet and is gauging 7,000,000 feet of gas at the latter depth. This well is a semiwildcat, being 1 mile from production, and opens up a little more acreage to gas production, and possible oil production.

RANGER DISTRICT
Week ending February 15

Brown County

Darby Petroleum Corp.'s No. 1 George location was abandoned. Duffey's No. 2 George had an initial production of 10 bbls. after having been shot with 30 quarts at 1,296-1,308 feet. Eastland Oil Co.'s No. 1 Pierce was dry and abandoned at 1,350 feet. Kissler and others' No. 1 Bryson was temporarily abandoned at 425 feet. S. B. Owens' No. 5 Whitesides had an initial production of 35 bbls. at 1,300-07 feet. Rowan-Tong's No. 1 George was dry and abandoned at 1,401 feet. E. L. Smith Oil Co.'s No. 32 George had an initial production of 40 bbls after having been shot with 10 quarts at 1,293-1,303 feet. Syndicate Oil Corp.'s No. 1 Wren was dry and abandoned at 1,353 feet. Ven-Mex Oil Co.'s No. 1 Butler-D was dry and abandoned at 1,316 feet. Woodley Petroleum Corp.'s No. 1 Kilgore was dry and abandoned at 1,252 feet. Bush & Roberts' No. 2 Richardson was temporarily abandoned.

Callahan County

Holden and others' No. 4-B Cavanaugh was shot with 30 quarts at 1,623-50 feet and had an initial production of 90 bbls. Humble Oil & Refining Co.'s No. 1 Jackson-D was dry and abandoned at 1,200 feet.

Coleman County

S. B. Owens' No. 2 Keeney was dry and abandoned at 1,984 feet. Levi Smith's No. 11 Morris location was abandoned. Acrey Brothers' No. 1 Baker was dry and abandoned at 1,002 feet. Stepp & Vandevetter's No. 2 Shore was plugged and abandoned at 963 feet. Yingling and others' No. 1 Pfluger was dry and abandoned at 1,508 feet.

Eastland County

Hoffman & Page's No. 4 Lyerla had an initial production of 35 bbls. after having been shot with 25 quarts at 1,250-75 feet.

Erath County

Southern Union Gas Co.'s No. 1 Koonsman was shot with 32 quarts at 2,310-50 feet and had an initial production of 1,843,000 feet of gas 800 pounds rock pressure.

Comanche County

Lone Star Gas Co.'s No. 1 Frost had an initial production of 1,712,000 feet of gas at 2,774-2,818 feet.

Fisher County

Mid-Kansas Oil & Gas Co. and Phillips' No. 1 Stephenson was dry and abandoned at 4,220 feet.

Kimble County

McLean & Jameson's No. 1 Cannon was junked and abandoned at 1,662 feet.

Jones County

F. E. Shaheen's No. 1 King was dry and abandoned at 2,204 feet.

Shackelford County

A. J. Hughes' No. 1 Green was dry and abandoned at 1,814 feet. Merrick & Land's No. 5-B Matthews was dry and abandoned at 1,766 feet. C. Morton's No. 1 Greene was dry and abandoned at 632 feet. States Oil Corp.'s No. 1 Nail was dry and abandnoed at 1,228 feet. Vacuum Oil Co.'s No. 7-C Matthews had an initial production of 40 bbls. at 1,142-56 feet.

Palo Pinto County

Bob Elmore's No. 1 Costello was dry and abandoned at 2,640 feet. Steff Oil Co.'s No. 1 Costello was dry and abandoned at 2,560 feet. Texas Pacific Coal & Oil Co.'s No. 165 Stuart & Sons had an initial production of 15 bbls. at 1,605-30 feet.

NORTH TEXAS PRODUCTION
Week ending February 15

Panhandle District—	Prod.
Carson County	8,560
Hutchinson County	24,110
Gray County	55,445
Moore County	605
Potter County	....
Wheeler County	545
Total this week	89,265
Total last week	91,601
Decrease	2,336
Wichita District—	
Archer County	17,480
Baylor County	355
Clay County	780
Cooke County	5,010
Foard County	205
Jack County	4,335
Haskell County	60
Montague County	6,320
Throckmorton County	725
Wilbarger County	28,695
Young County	8,242
Wichita County	25,225
Total this week	97,432
Total last week	95,885
Increase	1,547
Ranger District—	
Brown County	8,550
Callahan County	3,470
Coleman County	5,265
Comanche County	785
Palo Pinto County	600
Eastland County	4,990
Shackelford County	8,625
Stephens County	5,380
Total this week	37,665
Total last week	38,658
Decrease	993
Grand total this week	224,362
Grand total last week	226,144
Decrease	1,782

WICHITA DISTRICT
Week Ending February 15

Archer County

Perkins, Cullum & Navarro's No. 1 Wilson was dry and abandoned at a total depth of 1,502 feet. United Producers and Perkins' No. 2 Lyles was dry and abandoned at 1,725 feet. Consolidated and Grisham's No. 1 Harmel was dry and abandoned at 1,477 feet. Goldsmith and King Royalty Co.'s No. 5 Deitrich had an initial production of 70 bbls. at 1,154-68½ feet. T. F. Hunter's No. 2 Kunkel was dry and abandoned at 1,205 feet. Wayne King's No. 2 Portwood was dry and abandoned at 1,478 feet. Lawson & Duke's No. 4 Richardson had an initial production of 12 bbls. oil and 10 bbls. water at 1,418-24 feet. Reeder and Kisk Oil Co.'s No. 1 Kunkel was dry and abandoned at 1,194 feet. Seitz and

(Continued on Page 154)

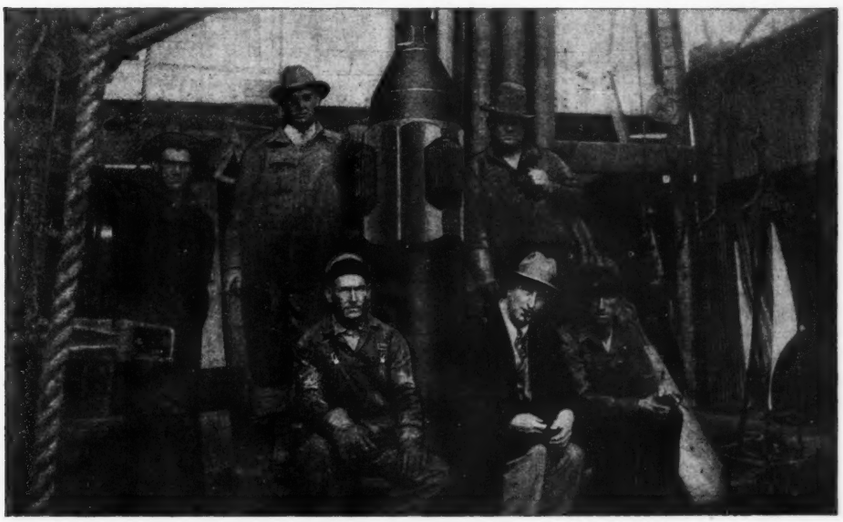
WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending February 17

Company, well, farm, name, section and block—	Remarks—
CARSON COUNTY	
Champlin Ref. Co.'s No. 5 McConnell, 990 ft. S line, 330 ft. W line, N 120 ac. NW, Sec. 67, Blk. 4, I.&G.N. Sur.	Rigged up and S.D.
Danciger O. & R. Co.'s No. 1 Block, 330 ft. N and E lines, Sec. 112, Blk. 4, I.&G.N. Sur.	S.D. 2,985 ft.
Delmar Oil Co.'s No. 5 Noel, 330 ft. S and W, NE cor. W½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	S.G. 3,000-10 ft; S.D. 3,131 ft.
Empire G. & F. Co.'s No. 1 Fields, 1,650 ft. N and E, lines, Sec. 13, Blk. 7, I.&G.N. Sur.	T.D. 3,232 ft; flowing 100 bbls. per hr. 3,220-32 ft.
Empire G. & F. Co.'s No. 2 Deahl, 660 ft. N and E, SW, Sec. 3, Blk. 5, B.&B. Sur.	Drlg. 3,035 ft.
Empire G. & F. Co.'s No. 1 Thorp, C NW, Sec. 26, Blk. T, A.B.&M. Sur.	Drlg. 3,212 ft.
Gulf Prod. Co.'s No. 1 Burnett-C, C SE SE, Sec. 35, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 1,160 ft.
H.A.M. Oil Co.'s No. 1 Cooper, 330 ft. S and W, E½ NE, Sec. 5, Blk. 9, H.&G.N.R.R. Sur.	T.D. 3,105 ft; T.P. 3,102 ft; 2,000 ft. oil in hole.
Herragan Oil Co.'s No. 1-A McConnell, 330 ft. N and W, W½ SW, Sec. 187, Blk. 3, I.&G.N.R.R. Sur.	T.D. 3,275 ft; G.W. 3,225-51 ft. and 3,265-75 ft; swbd. 120 bbls. 24 hrs.
McClintock et als' No. 2 Garner, 330 ft. W and S of E 55 ac., of N 80 ac., NW, Sec. 105, Blk. 4, I.&G. N.R.R. Sur.	Rigging up.
Osborne et als' No. 3 Percival, 330 ft. N and W, SE cor. E½ NE, Sec. 199, Blk. 3, I.&G.N.R.R. Sur.	Location.
Pansota Oil Co.'s No. 1 Block, 330 ft. S and W, NE cor. SW, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 2,935 ft.
Prairie O. & G. Co.'s No. 2 Nail, 330 ft. from N and W lines, N½ E½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	10,000,000 ft. gas 2,880-2,985 ft; S.D. 3,123 ft.
Ryan Cons Oil Co.'s No. 7 Block, 330 ft. N, 990 ft. W, SE cor. NE, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	S.D. 2,700 ft.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. from N and E, SE, Sec. 199, Blk. 3, I.&G.N. Sur.	S.D. 600 ft.
Skelly Oil Co.'s No. 19 Schafer, 330 ft. N, 990 ft. E, SW cor. NE, Sec. 198, Blk. 3, I.&G.N. Sur.	6,000,000 ft. gas 2,895-2,970 ft; S. D. 3,100 ft.
Skelly Oil Co.'s No. 20 Schafer, 330 ft. N, 990 ft. W, SE cor. N½, Sec. 198, Blk. 3, I.&G.N. Sur.	S.D. 3,090 ft.
L. W. Timm's No. 2 Garnet (White Deer), 330 ft. S and W, NE cor., Sec. 104, Blk. 4, I.&G.N.R.R. Sur.	S.D. 1,008 ft.
CASTRO COUNTY	
Colorado O. & R. Co.'s No. 1 Slemmons, SW cor., Sec. 73, Blk. M-17, B.S.&F. Sur.	Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur.	S.D. 510 ft. for csg.
CHILDRESS COUNTY	
Continental Oil Co. and Sun Oil Co.'s No. 1 Johnson, 660 ft. from NE, Sec. 580, Blk. H, W.&N.W. Sur.	Fishing 341 ft.
C. L. Sloane et als' No. 1 B. P. Smith, Sec. 49, F. P. Knott lands	S.D. 4,675 ft.
COCHRAN COUNTY	
Westbrook et als' No. 1 Slaughter, 400 ft. S and E, Labour 67, League 118, Knox Co. School lands	Drlg. 4,635 ft.
DONLEY COUNTY	
Blue Bonnett Oil Co.'s No. 1 Ball, 1,075 ft. N line, 985 ft. E line, Sec. 22, Blk. E, D.&P.R.R. Sur.	T.D. 3,006 ft; contract depth.

(Continued on Page 117)

Fred Dallas
does a good reaming job



Here's a Real Reaming Crew

Over in Cameron Parish, Louisiana, last month, Fred Dallas reamed down 1406 feet of hole with a 23½-inch Reed Three Point Reamer and set 18⅝-inch casing on bottom without a single hitch. Reed Reamers will save both time and money for you.

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Gulf Coast and Mid-Continent Distributors
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Pipe Line Construction News

GULF COAST PIPE LINE PARALLEL TO REFUGIO

HOUSTON, Tex., Feb. 17.—Gulf Coast Pipe Line Co. has completed laying and put in operation a combination 10-inch and 8-inch electrically welded line paralleling its present 6-inch and 4-inch line from the Refugio Field to the company's ship terminal at Port Aransas. The length of the line is 38 miles. It will increase the company's capacity from Refugio to approximately 50,000 bbls.

The line which was put in under direct supervision of C. E. McCarthy, superintendent of the Gulf Coast Pipe Line Co., although not long, accomplished an engineering feat in crossing four bays, namely: Copano, Talmingo, Puerta and Aransas. The terminal proper is on an island in Aransas Bay.

This company also recently completed a new pump station at a point on the line called Midway, and is enlarging its station at Refugio where three Prescott-Menominee pumps and two 240 horsepower Fairbanks-Morse and one 180 horsepower Fairbanks-Morse engines have been installed. At the company's Port Aransas terminal centrifugal pumps which will load a tanker at the rate of 7,000 bbls. an hour are in operation.

Other construction now under way by the company includes the laying of approximately 20,000 feet of 6-inch line from the Port Aransas terminal to the terminal of the Humble Pipe Line Co. at Harbor Island; the building of two additional 55,000-bbl. tanks at the terminal and the expansion of its field gathering lines at Refugio.

STANDARD OF KANSAS WILL EXTEND ITS LINE

The Standard Oil Co. of Kansas has contracted to purchase approximately 5,000 bbls. a day of crude oil from the Valley Center Pool, from the Continental Oil Co. The Standard Oil Co. announces it will extend its pipe line from Sallyards, in Greenwood County, to the Valley Center Pool, in Sedgwick County, a distance of 23 miles. Construction on the new pipe line will start at once, and it is expected to be completed by April 1. A temporary arrangement has been made with the Empire Oil & Refining Co. to transport the oil through its lines from the Valley Center Pool to El Dorado, until the new pipe line is completed.

About a year ago the Standard Oil Co. built its 6-inch line from its refinery at Neodesha to Sallyards, in Greenwood County. The purpose of the pipe line was to handle the oil purchased from the Empire Oil & Refining Co. in Greenwood County. Since that time the Standard Oil Co. has purchased between 6,000 bbls. and 7,000 bbls. daily from the Empire Oil & Refining Co. The potential production of the Valley Center Pool has been estimated at 25,000 bbls. daily, while the Continental Oil Co.'s potential is estimated at 12,000 bbls. a day.

BOLING-LONG POINT LINE

HOUSTON, Tex., Feb. 17.—Houston Pipe Line Co. has completed laying 12¾-inch gas line from Boling to Long Point, a distance of 13 miles. The line, which connects at Boling with a similar line which serves the Texas Gulf Sulphur Co.'s plant there, will furnish fuel to the company's new plant at Long Point. This line eventually will be extended a distance of 25 miles to connect with a line which extends from Houston south to Freeport.

EXPECT LINE PIPE PRODUCTION TO RUN AS HIGH AS LAST YEAR

By B. E. V. Luty

PITTSBURGH, Pa., Feb. 17.—Some of the pipe mills report a slight increase in their operations, while others note no change. Operation of pipe mills and tube mills may both be estimated at 40 to 45 per cent, while during January the rate seemed to run pretty close to 40 per cent.

Demand for standard pipe is of fair proportions, close to what would be expected for the time of year. Not much increase is likely until spring is well arrived. Boiler tube demand, confined almost entirely to seamless, is not particularly active but it is not really dull, and there is a good demand for seamless mechanical tubing.

Line pipe still shows no activity as to buying or formal inquiry. There is an order at Milwaukee involving about 100,000 tons, placed a few months ago and lately held up on account of weather and for settlement of certain technical details. Manufacture of this pipe is expected to start in a few weeks.

Pipe mills seem to have further and more explicit information about line pipe projects likely to come to a head shortly, and expect this year to run something like last year, when production of line pipe was very heavy indeed. As previously noted some of the regular pipe mills are likely to be in the market at no distane date with an electrically welded line pipe, at least two producers and possibly even a third.

The steel trade as a whole is doing quite well indeed, as attested by current news and by two pieces of statistics, the official report of production in January and the Steel Corporation's statement of unfilled obligations.

Production of Bessemer and open-hearth steel ingots in January was at a daily rate of 140,234 tons, which is 21 per cent over the December rate, 4 per cent over November and only 19 per cent under the average for the entire year 1929. The rate increased during January and has increased a little more this month, whereby it may be estimated at fully 150,000 tons daily. Peak production occurred last May, after which there was a slow decrease to October 1 and then a rapid decrease to the end of the year. The present rate may be taken as equal to the rate late in October, i.e., in a month and a half the loss of more than two months has been made up.

The Steel Corporation's unfilled obligations increased 51,517 tons during January, and that was really by far the most favorable showing made for the better part of a year. It is true some of the late months of last year showed greater increases in unfilled obligations, but those increases were due to annual rail orders being placed, purely a routine procedure. In January the bookings were in ordinary current business and any gain at all would make a good showing because there were heavy shipments against old orders.

Structural fabricating shops entered the year with a very good order book. In the first three weeks of the year they had light bookings but there has been heavier business since. The farm implement industry is running at not far from capacity, and better than in the latter part of last year. The Chesapeake & Ohio, for itself, Hocking Valley and Pere Marquette has ordered 11,350 freight cars, by far the largest single piece of business in a long while. The automobile industry is still quite slack but it has been improving materially.

Finished steel prices have been fairly steady for more than a fortnight.

LINE TO PENN POOL

FORT WORTH, Tex., Feb. 17.—A 6-inch connecting line is planned to be run from the Penn Pool to a point on the Magnolia's main line running from Winkler County to its tank farm at Midland, this connecting point being about 9 or 10 miles from the pool. Magnolia will take over the oil from the Cosden Oil Co., and possibly other companies in the pool, and will transport it to Cosden's refinery at Big Spring, for the Magnolia line continues east from its tank farm at Midland, past Big Spring and on to De Leon and the Gulf Coast.

LAYS LINE ON ICE

Prairie Pipe Line Co. took advantage of the recent cold spell to lay an 8-inch line across the Mississippi River at Fort Madison, Iowa, thus effecting a big saving in the expense compared with laying it on pontoons under normal conditions. The ice in the river when the line was laid averaged 1 foot in thickness. There were more than 14,000 feet of pipe required to reach across the river.

PALO PINTO LINE

The Lone Star Gas Co. is building approximately 7 miles of gathering lines to the six Hart gas wells in western Palo Pinto County, Texas, which are producing around 10,000,000 feet of gas per day, and will run the gas into its main line thence to towns in the vicinity and to the east toward Fort Worth.

TABER GAS EXTENSIONS

CHATHAM, Ontario, Feb. 15.—Following the construction of natural gas distribution for the business section of Taber, Alberta, last fall, the Canadian Western Natural Gas Co. of Calgary will this spring extend its distributing system to serve a considerable portion of the residential district. Construction will start about March 15.

Conditional on a sufficient number of applications being received, the Canadian Western Natural Gas Co. of Calgary is planning to extend its service to Barnwell, Alberta, some time in 1930.

MONTANA GAS PROJECT

CHATHAM, Ontario, Feb. 15.—The possibility that waste gas from the Turner Valley Field might be utilized for the Anaconda and other south Montana smelters is apparently negatived by announcement that the Hope Engineering Co. has contracted to furnish Wyoming gas to these plants. It is planned to build a 300-mile line from a point near Cody, Wyo., to Butte, Anaconda and Helena, construction to commence this spring.

FORT COLLINS LINE COMPLETED

Colorado-Wyoming Gas Co. has completed a 70-mile pipe line from Denver to Fort Collins, Colo. This extension of the Amarillo-Denver line increases its length to about 440 miles, and assures Fort Collins and Cheyenne an adequate supply of natural gas.

UTAH GAS & COKE CO. PLANS LINE IN IDAHO

On his return recently to Salt Lake from Pocatello, Idaho, L. Fitzpatrick, vice president of the Utah Gas & Coke Co., is quoted by a Salt Lake newspaper as follows:

"Our company is making plans to lay a pipe line into Idaho, from Ogden to Pocatello, which it is estimated will cost $3,500,000 and employ at the peak of construction about 1,000 men. It may be some time in March before the Idaho Public Utilities Commission will render a decision, but if certificate is granted, the petitioners, John McFayden, president of the Mountain Fuel Co. and vice president of Ohio Oil Co., and L. B. Denning, president of the Utah Gas & Coke Co., will form an Idaho corporation and petition for franchises in various communities. It is proposed to extend the gas line from Ogden into various parts of Idaho. If the preliminary plans of the petitioners are successful, work will be started on the new line as soon as necessary equipment can be assembled."

The line to Idaho will extend to Pocatello, Malad and other southern Idaho points.

The same interests recently obtained 50-year franchise for distribution of natural gas in Provo, Utah. The company will lay a line from Sandy, 15 miles south, to Provo and other towns along the route.

J. WHITFIELD DAVIS DEAD

SHREVEPORT, La., Feb. 15.—J. Whitfield Davis, chief oil dispatcher and a director of the Standard Pipe Line Co., died at his home here this week. He was born in West Point, Miss., November 28, 1878, and entered the employ of the Standard Oil Co.'s pipe line department as a telegraph operator in December of 1910 working in that capacity until January 1, 1916, when he was made oil dispatcher and in October of the following year he was made chief dispatcher, remaining in that capacity until his death, meantime having been elected a director of the company in 1927.

SURVEYING VAN POOL LINE

FORT WORTH, Tex., Feb. 17.—It is believed that a pipe line outlet to the Van Pool will soon be started, either by the Pure Oil Pipe Line Co. of Texas, a subsidiary of the Prairie Pipe Line Co., or the Pure Oil Co. The former is surveying a tentative line from the pool to a point near Teague on a Prairie line, and the latter company will probably start laying from Chandler to the Coast. It already has a 10-inch line from the pool to a loading rack at Chandler, 16 miles south, and this line will be extended.

RAILROADS INTO VAN

Two Texas railroads have filed petitions with the Interstate Commerce Commission seeking authority to build into the oil territory recently opened at Van, Tex. The Texas Short Line, controlled by the Texas & Pacific Railroad Co., proposed laying a branch from its main line at Grand Saline approximately 11 miles north of Van. The St. Louis Southwestern Co. proposed building a line from its main line at Van Junction which is south of the town of Van. This latter line would be about 17 miles long.

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BENAVIDES, TEXAS
EL DORADO, ARK.
WICHITA, KANSAS
SEAL BEACH, CALIFORNIA

OKLAHOMA FIELDS

(Continued from Page 50)

well at this rate for 75 days which will permit the offset owners to drill their wells to the sand.

The Konawa Pool shows a daily average of 2,317 bbls. from seven wells in the week ending February 12. Empire Oil & Refining Co. has staked a new location in the area. The new test is No. 1 Louisiana, NW cor. NE SE Section 16-6-6. McCulloch Oil Co.'s No. 1 Songster in Section 7-6-6 had 5,000,000 feet of gas at 2,850 feet, and a show of oil. Hilton-Phillips Petroleum Co.'s No. 1, SE cor. NE Section 20-6-6, was drilling at 2,570 feet. The test is an important one as it may extend production in the area.

East Earlsboro

The East Earlsboro Pool had the largest increase in the Seminole area in the week ending February 12. Production increased approximately 14,000 bbls. a day. Carter Oil Co.'s No. 2 Campbell, in Section 20-9-6, flowed 1,970 bbls. in 15 hours. The well is on the east side of the field. Producers & Refiners Corp.'s No. 4 Jefferson, in Section 19-9-6, flowed 3,575 bbls. in 24 hours on the gas lift. The Texas Company's No. 6 Magruder, Section 19-9-6, pumped 35 bbls. in eight hours. Same firm's No. 8 Magruder, in Section 19-9-6, had 1,000 feet of oil in the hole from the Wilcox sand at 4,124-48 feet. McMan Oil & Gas Co.'s No. 2 Fixico, in Section 20-9-6, was drilling in Viola at 4,145-75 feet. Carter Oil Co.'s No. 3 Green, in Section 19-9-6, had the base of the Wilcox sand at 4,240 feet, and was drilling in lime at 4,249 feet.

Production in the Earlsboro Pool increased 1,100 bbls. over the previous week. Some of the increase was due to the new wells south of the pool. A new location was announced by the Amerada Petroleum Corp. and others for No. 2 Edwards, NE cor., Section 22-9-5. Magnolia Petroleum Co.'s No. 2, SE cor. NE SW, Section 14-9-5, is also a location in the area south of the old pool.

Production in the East Little River Pool increased only 700 bbls. a day from the previous week. Mid-Continent Petroleum Corp.'s No. 4 Yarhola, NW cor. SE SE, Section 8-7-7, had gas at 3,125-40 feet, and cored a showing of oil at 3,167-77 feet, and was shut down. Prairie Oil & Gas Co.'s No. 4 Tiger, NW cor. NE, Section 8-7-7, has 1,000,000 feet of gas at 3,182 feet, and was flowing 10 bbls. of oil an hour.

Little River Pool increased 2,500 bbls. a day from the previous week's gauges. Sinclair Oil & Gas Co.'s No. 1 Harvey, NW cor., Section 12-7-6, was abandoned at 3,238 feet. It was an old well plugged back. Gypsy Oil Co.'s No. 1 Carolina, in Section 13-7-6, had a showing of oil at 3,050 feet, and was drilling deeper at 3,235 feet. Prairie Oil & Gas Co.'s No. 2 Kami, in Section 13-7-6, had a showing of oil in the Cromwell sand at 3,118 feet. The second Cromwell sand was at 3,180 feet, and the test was coring at 3,-248 feet. Indian Territory Illuminating Oil Co.'s No. 1 Johnson, SW cor. SE, Section 24-7-6, had cemented 8-inch casing at 3,012 feet.

Sasakwa Declines

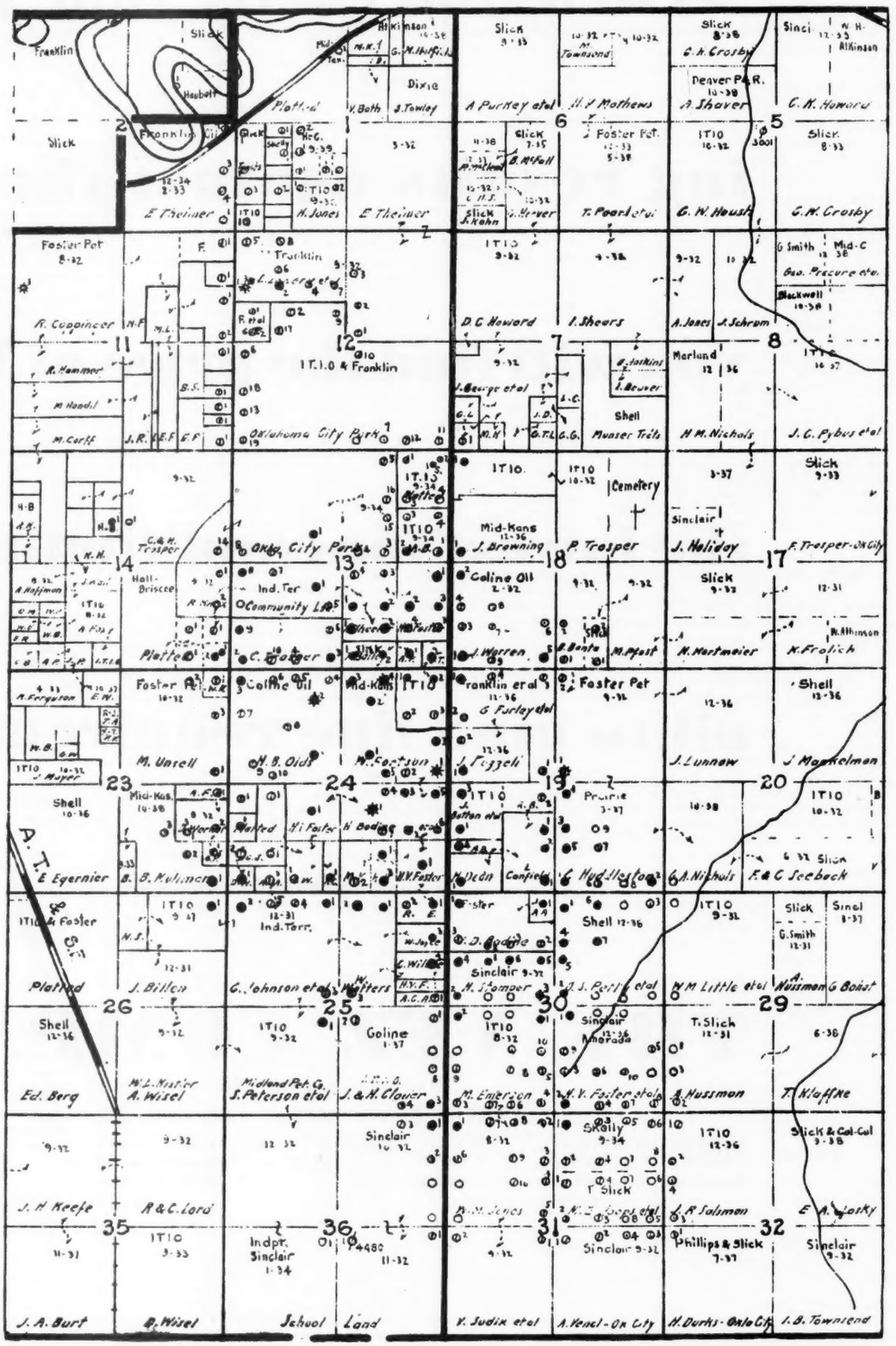
The Sasakwa Pool is one of the few pools in the area showing a decline in production. The decline amounts to 500 bbls. a day. The Texas Company No. 2 Lewis, 13-5-7, swabbed 200 bbls. of oil at a total depth of 2,780 feet. Barnsdall Oil Co.'s No. 2 Lusty, SW cor. NE, Section 13-5-7, was shot with 20 quarts and swabbed 15 bbls. of oil from sand at 2,667-78 feet, and was cleaning out. Pure Oil Co.'s No. 8 Bates, SE cor. NE, Section 13-6-7, was cleaning out at 2,895 feet and flowed 204 bbls. of oil. Twin State Oil Co.'s No. 1 Marshall, SE cor. SW NW, Section 7-6-8, has been completed for 25 bbls. on the pump. Sinclair Oil & Gas Co.'s No. 5 Davis, NW cor. SE, Section 7-6-8, flowed 60 bbls. while fishing at 2,830 feet. Same company's No. 1 Davis, NE cor. SW, Section 7-6-8, was cleaning out at a total depth of 2,-763 feet. Carter Oil Co.'s No. 3 Spillman, SW cor. NW SW, Section 7-6-8, was drilling at 3,135 feet in the Cromwell sand.

St. Louis Increases

Production in the St. Louis area increased 1,500 bbls. It is the first increase the pool has made this year. The daily average production in the pool was 42,744 bbls. from 466 wells. Several Hunton lime wells had showings of oil during the week. Gypsy Oil Co.'s No. 1 Duvall, NW cor. SW, Section 3-7-4, swabbed 457 bbls. from a total depth of 3,959 feet, in Hunton. Gypsy Oil Co.'s No. 1 Rose, SW cor. SE SE, Section 4-7-4, was drilling at 3,920 feet in Hunton with 200 feet of oil in the hole. Magnolia Petroleum Co.'s No. 1 Wyatt, SE cor. SW NE, Section 4-7-4, had top of the Hunton at 3,790-3,825 feet with 2,-000 feet of oil in the hole. Sinclair Oil & Gas Co.'s No. 2 Morgan, NW cor. NE SW, Section 4-7-4, was drilling in Hunton at 3,725 feet, with nothing showing. Twin State Oil Co.'s No. 1 Norman, SE cor. SW NW, Section 4-7-4, was drilling at 3,768 feet in Hunton swabbing 100 bbls. Atlantic Oil Producing Co. and Wofford Drilling Co.'s No. 1 McGee, NE cor. NW SE, Section 4-7-4, was plugged back to the Hunton after finding water in the Simpson. The well made 424 bbls. North of the original production in the St. Louis Pool, Sinclair Oil & Gas Co.'s No. 4 Brandenburg, NW cor. SW SW, Section 7-7-5, was drilling in the Viola at 3,827-72 feet. Some predict this test may find production in the deeper formations.

Northwestern Deep Tests

In the northwestern part of the State the Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW, Section 14-26-24w, Harper



The above map of the Oklahoma City Pool, is part of a new 25-section map recently prepared by the Kirk Nagle Map Co. of Tulsa. The map shows the latest ownership, completed wells, and new locations in the field.

County, had another showing of oil at 7,175-80 feet. The test was drilling deeper at 7,214 feet. It is the deepest rotary test yet drilled in the State. Empire Oil & Refining Co.'s No. 1 Bruce, SW cor. NE NE SW, Section 12-25-20w, Harper County, was preparing to rig up rotary tools. Sinclair Oil & Gas Co.'s No. 1 Stewart, SE cor. SW, Section 33-27-16w, Woods County, was still fishing at 6 745 feet. Same company's No. 1 Crowell, C NW NE, Section 23-28-16w, Woods County, was drilling at 4,060 feet. Prairie Oil & Gas Co.'s No. 1 Wilbur, NE cor. NW, Section 23-23-17w, Woodward County, was shut down at 6,050 feet. Bu-Vi-Bar Petroleum Corp. and others' No. 1 Thompson, SE cor. SW, Section 10-25-15w, Woods County, was shut down at 6,104 feet. Harris & Haun and others' No. 1 Wyatt, C SE, Section 9-23-20w, Woodward County, was drilling at 5,310 feet.

Leasing in Cement District

Ramsey Petroleum Corp. has closed a series of deals whereby it has secured between 5,000 and 6,000 acres of leases, in the Cement district, in Caddo County. The company plans to drill a 6,500-foot test on the new acreage and deep shallow wells to the new deep sand horizon. The Ramsey Petroleum Corp. acquired 1,083 acres with 23 producing oil wells, and one gas well. The shallow wells were producing 125 bbls. a day. These wells may be deepened to the new sand recently found by the Magnolia Petroleum Co. and Noble Olsen Drilling Co. Ramsey Petroleum Corp. also has acquired an interest in the Lone Star Gas Co.'s properties with 12 wells producing 56 bbls. a day.

The location of the deep test has not been announced. Work may be delayed for several months. At this time the company is rigging up to deepen No. 1 Jones, NW cor. SW SE, Section 31-6-9w, Caddo County. The No. 1 Wade, NE cor. SW Section 2-5-9w, Caddo County. Both of these wells are shallow producers and will be deepened to the 3,500-foot horizon.

English Drilling Co.'s No. 3 Abernathy, NW cor. SE SE Section 31-6-9, was completed for 90 bbls. day from sands at 3,295-3,315 and 3,334-36 feet. Noble Olsen Drilling Co.'s No. 3 Rowe, SW cor. NW SE NE Section 36-6-10w, Caddo County, is shut down waiting on cement at a total depth of 3,415 feet. Magnolia Petroleum Co.'s No. 3 Niles, SE cor. NW Section 36-6-10w, was coring at 3,900 feet.

Homaokla Oil Co. and others' No. 1 Newson, SE cor. NE NE Section 16-5-3, McClain County wildcat which has been pumping 15 bbls. a day from the Viola at 3,582-3,604 feet, is being drilled deeper. The test was drilling at 3,659 feet, still in the Viola lime. The test also has about 400 feet of oil in the hole.

Another wildcat test in Pottawatomie County was estimated to be making 100 bbls. a day from the Hunton lime. Keister & Manning's No. 1 Rowlett, SE cor. SW NE Section 30-8-4, was flowing 12 bbls. every three hours. The Hunton lime was found at 4,465-71 feet. Tankage was being erected and the well will be given a swabbing test.

Greater Seminole Production

The production of the important pools in Greater Seminole area increased on the gauge for the week ending February 12. The Seminole area averaged 240,800 bbls. daily from 1,821 wells. The daily average gauges were as follows:

Pools—	Wells	Bbls.
Little River	360	47,168
East Little River	56	20,976
Carr City	59	9,055
Maud	136	5,661
Mission	110	15,214
Bowlegs	293	22,851
Earlsboro	294	32,181
East Earlsboro	122	52,997
Seminole	273	22,217
East Seminole	31	4,286
Searight	87	8,194
Allen	254	23,423
Asher	26	2,526
Konawa	7	2,317
St. Louis	466	42,744
Sasakwa	42	9,552
Total	2,616	321,256

Pipe Line Shipments

The daily pipe line and tank car shipments for the same seven days show a decline of approximately 2,500 bbls. a day from the previous week in the Seminole area. The shipments for the week ending February 12 were as follows:

Company—	Bbls.
Barnsdall	2,081
Champlin	3,972
Continental	1,115
Consolidated	645
Cosden	6,238
Empire	5,757
Gypsy	26,333
Magnolia	11,734
Oklahoma	33,588
Prairie	29,692
Producers & Refiners	2,413
Pure	4,588
Shaffer	6,088
Shell	19,549
Sinclair	30,794
Texas	19,445
Tidal	14,056
White Oak	711
Total	216,159
Tank cars	1,350
Grand total	217,509

Comanche County

Pelwin Oil Co.'s No. 1 Howe, SE cor. SW, Section 33-1-9w, is rigging up rotary.

Cotton County

Cullum & Perkins' No. 1 Vorhees, NE cor. SW SE, Section 19-1s-9w, is a rig. J. B. Nantz has the rig up for No. 1 Mah-Bah-Quak, SW cor. NW, Section 29-1s-9w. Empire Oil & Refining Co. made location for No. 1 Chambers, NW cor. SE, Section 8-3s-9w. Perkins & Cullum's No. 1 Humphries, SE cor. NE NW, Section 35-1s-10w, is a dry hole at 2,175 feet.

Kiowa County

Mesa Oil Co.'s No. 1 Greenlee, NW cor., Section 13-6-17w, has been abandoned at 500 feet.

Oklahoma County

Cromwell & Franklin has dug the cellar for No. 20 Trosper Park, NE cor. NW SW, Section 12-11-3w. Long-Warr Oil Co. moved the rig in for No. 1 Castle, SW cor. NW, Section 20-11-3w. Wirt Franklin Petroleum Corp.'s No. 2 Lowery, CEL W half NW, Section 12-11-3w, Oklahoma City Field, made 16,421 bbls. in sand 6,360-83 feet. Cromwell & Franklin and others' No. 3 Trosper Park, SE cor. SW NE, Section 13-11-3w, has been completed for 10,123 bbls. in lime 6,079-6,500 feet. Indian Territory Illuminating Oil Co. and others' No. 6 Trosper, NE cor. SE SW, Section 13-11-3w, made 1,973 bbls. in sand 6,240-6,315 feet. No. 8 Trosper, NW cor. SW, Section 13-11-3w, made 6,000,000 feet of gas at 6,320 feet in sand. No. 9 Trosper, NW cor. SW SW, Section 13-11-3w, made 4,293 bbls. in sand 6,305-35 feet. No. 10 Trosper, SE cor. SW SW, Section 13-11-3w, has been completed for 14,136 bbls. in sand 6,390-6,408 feet. No. 1 Drake, NE cor. SE SE, Section 14-11-3w, topped sand at 6,329 feet, drilled to 6,357 feet and made 4,631 bbls. No. 3 A Bodine, NW cor. NE SE, Section 24-11-3w, has been completed for 6,000,000 feet of gas in lime 6,078-6,520 feet. No. 1 Wilkie Anderson, SE cor. NE, Section 25-11-3w, made 125,000,000 feet of gas in lime 6,424-59 feet. No. 2 Wilkie Anderson, NE cor. SE NE, Section 25-11-3w, has been completed for 8,390 bbls. in sand 6,305-6,466 feet. Sinclair Oil & Gas Co.'s No. 1 School Land No. 54, NE cor., Section 36-11-3w, made 4,940 bbls. in sand 6,394-6,432 feet. Mid-Kansas Oil Co. has the cellar dug for No. 2 Browning, NW cor. SW NW, Section 18-11-2w. Coline Oil Co.'s No. 5 Warren, SE cor. SW, Section 18-11-2w, made 5,325 bbls. in lime 5,920-6,523 feet. Indian Territory Illuminating Oil Co. and others' No. 4 Button, NW cor. SW SW, Section 19-11-2w, topped lime at 6,058 feet, drilled to 6,511 feet and made 6,996 bbls.

Washita County

Southern Investment Co. made location for No. 1 Johnson, NW cor., Section 10-9-20w.

Tillman County

Paul R. Flake's No. 1 Barba, NE cor. SE NE SE, Section 19-1s-16w, is drilling at 200 feet.

Carter County

Carter Oil Co.'s No. 4 Hale, SE cor., Section 28-1s-3w, has been abandoned at 3,204 feet.

Creek County

H. U. Bartlett's No. 5-B Bartlett, SW cor. NE SW NE, Section 18-19-9, has been completed for 1,250,000 feet of gas in sand 2,430-48 feet. Magnolia Petroleum Co.'s No. 4 Tiger, CNL SE, Section 17-17-7, has been abandoned at 2,855 feet. Franchott and Mid-Continent Petroleum Corp.'s No. 12 Carr, NE cor., Section 26-16-9, is a dry hole at 3,422 feet. Skelly Oil Co.'s No. 1 Foster, NE cor. SE SW, Section 30-15-9, made 110 bbls. in Wilcox sand 3,592-3,602 feet.

Lincoln County

Tom Slick Oil Co.'s No. 1 Massie, NE cor. SE, Section 18-14-4, is dry and abandoned at 5,400 feet in Wilcox sand.

Hughes County

The Prairie Oil & Gas Co.'s No. 2 Canard, SE cor. NE NW, Section 28-9-10, has been completed for 15,500,000 feet of gas in sand 2,756-77 feet.

Noble County

Indian Territory Illuminating Oil Co.'s No. 1 Albers, NW cor., Section 3-20-1w, is dry and abandoned at 3,519 feet.

Marshall County

Walter Cline moved a machine in for No. 1 Bynum, SW cor. SE NW, Section 2-5s-5. Bilbo Oil Trust Co.'s No. 3 Sullivan, NE cor. SW NW, Section 30-5s-6, made 30 bbls. in sand and lime 592-723 feet.

Muskogee County

Ray & Berry's No. 1 Johnson, C N half NW SW, Section 14-13-18, is a machine. M. S. Mussellem moved a machine in for No. 2 Cole, SE cor. NW NE, Section 5-13-19. Denton & Marshall's No. 1 Grayson, SE cor. NE NW, Section 12-15-15, is a dry hole at 1,818 feet. E. Price and others' No. 3 Howard, SE cor. NW NW NW, Section 29-15-16, has been abandoned at 1,240 feet. H. L. Jolly's No. 3 Carlina, SW cor. NW SW, Section 9-15-18, made 10 bbls. in sand 924-40 feet, after plugging back from 1,720 feet. Robert Bebb's No. 1 Muskogee Townsite, Block 78, NW cor. SW NE NE, Section 34-15-18, has been completed for 500,000 feet of gas in sand 820-48 feet. O. E. Stoner's No. 1 Mundis, NW cor., Section 31-14-19, has been abandoned at 1,210 feet. Bement Oil Co.'s No. 1 Davis, CSL SE NE, Section 15-13-16, is dry and abandoned at 1,891 feet. Hale & Reynolds, SW cor. NW SE, Section 1-13-18, is dry at 1,460 feet. L. R. Kershaw's No. 2 Fee, NE cor. SW SW SE, Section 15-13-18, made 50,000 feet of gas in sand 720-39 feet. C. F. Ray and others' No. 1 Montgomery, SE cor., Section 15-13-18, has been completed for 700,000 feet of gas in sand 693-706 feet. M. S. Mussellem's No. 6 Brook, NW cor. NE SE, Section 4-13-19, is a dry hole at 1,366 feet. Midwestern Oil & Gas Co.'s No. 2 Parker, C NW SW, Section 31-12-19, has been completed for 2,750,000 feet of gas in sand 666-76 feet.

Okfuskee County

Campbell-Cothran and others made location for No. 1 Davis, NW cor. NE SE, Section 8-13-10. Jarvis & Holm's No. 2 Fier, SW cor. SE SW, Section 16-10-11, is rigging up to deepen from 2,565 feet. Sunray Oil Co. and C. M. Shelden's No. 2 Wilson, NE cor. NW SW, Section 22-12-11, made 200 bbls. in sand 2,726-33 feet.

Pottawatomie County

Osage Indian Development Co. has the rig up for No. 1 Earlsboro Townsite, Lot 3, Block 44, SE cor. NE SW, Section 8-9-5. Indian Territory Illuminating Oil Co.'s No. 2 Brandenburg, SW cor., Section 35-8-4, has been completed for 2,400 bbls. in Hunton lime 3,689-3,735 feet. The Prairie Oil & Gas Co.'s No. 1 McGee, SE cor. NW, Section 4-7-4, made 610 bbls. in Hunton lime 3,728-3,848 feet.

Seminole County

Gypsy Oil Co. made location for No. 1 Mecco, SW cor., Section 14-9-5. Amerada Petroleum Corp. and others staked location for No. 2 Ground, NW cor., Section 23-9-5, South Earlsboro extension. The rig is being built for No. 1 Stidham, NW cor. SW SW, Section 23-9-5. The Prairie Oil & Gas Co. staked location for No. 1 Ground, NW cor. NE, Section 23-9-5. Tidal Oil Co. and Inter-Ocean Oil Co.'s No. 6 Lasley, NW cor. SE SE, Section 19-9-6, East Earlsboro Pool, is a cellar. Mid-Continent Petroleum Corp. has dug the cellar for No. 5 Harjoche, NW cor. SW SE, Section 8-6-6, Konawa Pool. Independent Oil & Gas Co. made location for No. 2 Simedihake, SW cor. SE NE, Section 8-6-6. No. 2 Okfuskee, SW cor. SE NW, Section 16-6-6, is a location. Empire Oil & Refining Co. moved the rig in for No. 1 Louisiana, NW cor. NE SE, Section 16-6-6. Dixie Oil Co. made location for No. 1 Norman, NE cor. NW, Section 17-6-6. The Prairie Oil & Gas Co. has staked location for No. 2 Griffin, SE cor. SE NE, Section 17-6-6. Location has also been made for No. 3 Griffin, SE cor. NE, Section 17-6-6.

Magnolia Petroleum Co.'s No. 1 Grounds, NE cor. NW, Section 23-9-5, South Earlsboro extension, has been shut in for a 100-bbl. pumper after swabbing 633 bbls. in 16 hours from Wilcox sand 4,216-29 feet. Carter Oil Co.'s No. 3 C. Mayhue, NW cor. SE SW, Section 11-9-6, made 390 bbls. in Wilcox sand 4,125-34 feet. No. 1 Powell, NW cor., SE SW, Section 17-9-6, is dry and abandoned at 4,293 feet. Barnsdall Oil Co.'s No. 6 Noble, SW cor. SE SW, Section 18-9-6, East Earlsboro Pool, has been completed for 31 bbls. in Wilcox sand 4,208-28 feet. No. 7 Noble, SE cor. SW SW, Section 18-9-6, made 42 bbls. from Wilcox sand 4,221-35 feet. Shell Petroleum Corp.'s No. 2 Hopper, NE cor. SW NE, Section 19-9-6, flowed 1,364 bbls. in Wilcox sand 4,125-52 feet. The Texas Company's No. 5 Magruder, SE cor. NW NW, Section 19-9-6, had Wilcox sand 4,190-4,230 feet and pumped 55 bbls. Gypsy Oil Co.'s No. 3 Maley, NE cor. NW NW, Section 20-9-6, has been completed for 42 bbls. in Wilcox sand 4,273-86 feet. Sinclair Oil & Gas Co.'s No. 2 I. Davis "B," NE cor. SW, Section 7-6-8, Sasakwa Pool, flowed 1,405 bbls. from Gilcrease sand 2,785-2,802 feet. Skelly Oil Co. and Rogers' No. 1 Chapman, NW cor. NE SW, Section 8-6-8, has been drilled to 4,224 feet in Wilcox sand and plugged back to 2,736 feet and completed for 50 bbls. Shell Petroleum Corp.'s No. 1-A Caesar, NW cor. SE NE, Section 11-7-6, Little River Pool, made 851 bbls. in sand 3,096-3,147 feet. Gypsy Oil Co.'s No. 2 Willie, NW cor. NE, Section 24-7-6, flowed 1,440 bbls. from Wilcox sand 4,127-56 feet. The Prairie Oil & Gas Co. and T. B. Slick's No. 2 K. Harjo, SE cor. NE NW, Section 8-7-7, East Little River Pool, made 65 bbls. in 7 hours from Cromwell sand 3,177-99 feet. No. 3 K. Harjo, NE cor. SE NW, Section 8-7-7, was completed for 120 bbls. in Cromwell sand 3,156-95 feet.

Blackwell Oil & Gas Co.'s No. 1 Lusty, SW cor. SE, Section 12-5-7, is producing 65 bbls. from sand 2,880-90 feet. Mid-Continent Petroleum Corp.'s No. 1-A Harjo, SE cor. NE NE, Section 14-5-7, was completed for 70 bbls. in Wilcox sand 4,276-4,350 feet. No. 17 Fleet, NE cor. SW SE, Section 7-5-8, Allen Pool, has been completed for 50 bbls. in Wilcox sand 4,138-40 feet.

Wagoner County

Western Gas & Electric Co.'s No. 4 Barnett, C W half NE, Section 34-18-17, is drilling at 40 feet. H. H. Orr's No. 3 Grayson, SE cor. NE SW, Section 34-17-18, has been completed for 500,000 feet of gas in sand 427-37 feet.

Stephens County

Ven Mex Oil Co. and Mid-Continent Petroleum Co.'s No. 5 Burke, NW cor. NE, Section 34-1s-8w, is rigging up. Heydrick and others' No. 4 Poole, NE cor. SW SW SW, Section 35-1s-8w, is rigging up. Wirt Franklin Petroleum Corp.'s No. 1 Martin, SW cor. SE SE, Section 9-2s-6w, is a rig. No. 2 Martin, NE cor. SE SE, Section 9-2s-6w, is a location. Dunmar Oil Co. is erecting the rig for No. 2 Randle, SW cor., Section 10-2s-6w. Magnolia Petroleum Co.'s No. 1 Christy, NW cor., Section 15-2s-6w, is a rig. Atlantic Oil Producing Co. is moving the tools in at No. 1 Brittian, NE cor., Section 16-2s-6w. Magnolia Petroleum Co.'s No. 6 D. Russell, SW cor. SE, Section 25-1s-9w, has been abandoned at 2,650 feet. Douthitt and others' No. 2 Nigh, SE cor. NW NW, Section 34-1s-8w, is pumping 5 bbls. from sand 2,230-42 feet. Ven Mex

Oil Co. and Mid-Continent Oil Co. and others' No. 1 Andrea, SW cor. NE SE, Section 5-2s-6w, has been abandoned at 3,327 feet. Magnolia Petroleum Co.'s No. 2 Andrea, NE cor. SE NE, Section 8-2s-6w, has been completed for 14,000,000 feet of gas in sand 3,250-65 feet.

Okmulgee County

L. C. Wheeler and others' No. 2 Finerty, SE cor., Section 31-16-12, is rigging up. W. C. Newman Corp. made location for No. 1 Sarcy, SE cor. SW, Section 19-12-12. Mitchell Oil Co. made location for No. 11 Randall, NW cor. NE, Section 30-12-12. W. T. Campbell and others' No. 1 Freeman, SE cor., Section 18-14-11, is dry and abandoned at 3,073 feet. I. M. Levine and others' No. 2 Warner, NW cor. SE NW, Section 24-14-12, made 1,000,000 feet of gas in sand 1,610-45 feet.

Osage County

A. G. Oliphant and others made location for No. 1, SW cor. NW SW, Section 11-21-8. Vacuum Oil Co. is building the rig for No. 7, NE cor. SW NW, Section 11-26-6. Stephenson and others' No. 1, NE cor. SW, Section 14-26-8, is a machine rigging up. Sam Goodman's No. 3, SW cor. NE NW, Section 12-26-11, is dry and abandoned at 897 feet. Peters Petroleum Corp.'s No. 1, SE cor. NW, Section 27-25-9, has been abandoned at 2,448 feet. Sterling Oil & Gas Co.'s No. 17-A, SW cor. NW, Section 12-21-11, made 10 bbls. in sand 1,819-43 feet after plugging back from 1,889 feet.

Payne County

Shaffer Oil & Refining Co.'s No. 2 Echo Hawk, NW cor. SW NE, Section 4-18-5, is an old well drilling deeper at 3,518 feet. Magnolia Petroleum Co.'s No. 1-A Kaufman, NE cor. NW SE, Section 6-17-4, is spudding.

Pawnee County

Wilson and others' No. 1 Ruble, NE cor. NW NW, Section 7-20-8, is rigging up. Operators Oil Co. made location for No. 1 Greenwood, SE cor., Section 19-20-9. McMan Oil Co. staked location for No. 1 Clifford, SW cor., Section 20-20-9. Johnson Oil & Refining Co.'s No. 3 Byles, CNL SE NE, Section 27-20-9, is drilling at 1,200 feet. John H. Markham, Jr.'s, No. 7 Hull, SE cor. NW NE, Section 23-21-7, is drilling at 150 feet. G. W. Lillie and others' No. 12 Helmick, NE cor. SW NE, Section 18-21-8, made 10 bbls. in Cleveland sand 1,585-1,650 feet. P. Adamson, Jr.'s, No. 1 Kelso, NW cor. SW SW, Section 19-21-8, is dry and abandoned at 1,435 feet. Geraldine Oil Co.'s No. 3 Edmiston, NE cor. SW SW, Section 30-21-9, is pumping 15 bbls. from sand 616-23 feet. H. U. Bartlett's No. 2 Fleming, SE cor., Section 15-20-9, made a 15-bbl. well in Red Fork sand 1,919-30 feet. Jenal & Lee's No. 1 Smith, NW cor. NE SE, Section 25-20-9, has been completed for 10 bbls. in Hominy sand 2,496-2,501 feet.

Pontotoc County

Independent Oil & Gas Co.'s No. 2 Davis, SE cor. NW SW, Section 19-5-5, Bebee Pool, made 110 bbls. in Hunton lime, 2,210-95 feet. Benedum & Trees Oil Co.'s No. 1 Browall, SE cor. NE NW, Section 31-5-5, has been completed for 140 bbls. at 2,655 feet. Louisiana Oil Refining Corp.'s No. 9 Warfle, C SW NE, Section 20-5-8, made 12 bbls. in sand 1,338-48 feet. Dixie Oil Co.'s No. 3 Herman, SW cor. NW SW, Section 6-4-8, has been completed for 126 bbls. in sand 2,017-27 feet.

PRODUCTION OF SEMINOLE POOL

Average daily production of the Seminole area for the week ending February 10:

Little River Pool

Company, farm—	S.T.R.	Wells	prod.
Amerada:			
Nitey	2-7-6	3	299
Amerada-Wilcox:			
Fore	35-8-6	2	487
Barnsdall:			
Cotcha	23-7-6	3	270
Factor	13-7-6	1	114
Hotulka	22-7-6	3	278
Walker	4-7-6	1	2
Blackwell:			
Baker	11-7-6	5	385
Nitey	35-8-6	5	145
Talley	14-7-6	4	790
Thomas	11-7-6	1	Off
Bryan-Emery:			
Carter	4-7-6	1	20
Carter:			
Alec	23-7-6	2	108
Company, farm—	S.T.R.	Wells	prod.
Cotcha	23-7-6	3	68
Cudjo	23-7-6	3	88
Factor	26-7-6	1	31
Fish	36-8-6	3	280
Harjo, C.	11-7-6	2	1,584
Harjo, M.	13-7-6	4	217
Jackson	11-7-6	5	1,820
Larney, B.	26-7-6	2	216
Larney, J.	24-7-6	4	725
Lena	10-7-6	1	143
Moore	11-7-6	2	202
Tewee	14-7-6	6	546
Thomas, M.	11-7-6	1	125
Walker	24-7-6	4	2,453
Wilson	12-7-6	1	63
Champlin:			
Tewee	14-7-6	3	560
Continental:			
Cosar, L.	36-8-6	7	588
Cosar, M.	25-8-6	1	206
Milsey	11-7-6	2	245
Empire:			
Charty	24-7-6	3	289
Coker	13-7-6	4	905
Cotcha	27-7-6	2	7
Sandlin	3-7-6	1	10
Gypsy:			
Brown, C.	33-8-6	1	212
Brown, M.	33-8-6	1	69
Campbell	36-8-6	1	1
Conard	22-7-6	2	97
Cosar, W.	36-8-6	2	121
Cotcha	23-7-6	13	854
Denmark	11-7-6	3	346
Hulhoke	14-7-6	11	1,093
Nungee	1-7-6	1	Off
Potty	36-8-6	4	243
Renton	11-7-6	5	1,214
Willie	24-7-6	2	2,825
Independent:			
Carpenter	27-7-6	2	252
Davis, R.	13-7-6	7	487
Tewee	14-7-6	6	1,119
Harris	23-7-6	13	1,206
Williams	15-7-6	1	271
Independent et al:			
Davis, L.	2-7-6	5	483
Reed	26-7-6	1	Off
I. T. I. O.:			
Campbell	1-7-6	1	206
Dungan	35-8-6	3	139
House, M. A.	1-7-6	1	16
House, W. E.	1-7-6	1	8
House, W. E. "B"	2-7-6	4	327
Hull	26-8-6	2	343
Jackson	1-7-6	3	141
McCulla	1-7-6	2	408
Nitey	2-7-6	5	93
Phoebe "A"	36-8-6	1	15
Phoebe "B"	36-8-6	2	102
Soketeche	1-7-6	3	232
Magnolia:			
Cruse	2-7-6	4	216
Denby	11-7-6	4	200
Harjo "A"	14-7-6	2	20
Harjo "B"	14-7-6	2	56
Potty	35-8-6	4	20
Reed	22-7-6	3	326
Mid-Continent:			
Bruner	11-7-6	4	88
Bleck	23-7-6	1	11
Wadsworth	36-8-6	4	34
Pine:			
Bean	13-7-6	2	664
Heyecka	26-8-6	7	633
Pine-Phillips:			
Potty	35-8-6	1	25
Prairie:			
Chilcoat	25-8-6	3	323
Coker	1-7-6	2	284
Gibson	14-7-6	5	654
Harris	14-7-6	4	567
House	2-7-6	4	72
Reed	13-7-6	2	890
Talley	14-7-6	6	731
Williams	15-7-6	2	124
Wood	26-7-6	3	73
Prairie-Amerada:			
Sunny	14-7-6	5	685
Prairie-Slick:			
Cudjo	26-7-6	4	326
Producers & Refiners:			
Davis	13-7-6	1	839
Johnson	24-7-6	2	798
Moppin	24-7-6	2	126
Pure:			
Brinson	24-7-6	3	426
Cotcha	23-7-6	12	1,826
Harjo	11-7-6	5	1,623
Hollins	11-7-6	1	197
Reiter-Foster:			
Bunyard	14-7-6	2	268
Ritter	31-7-6	1	7
Shaffer:			
McCan	33-7-6	1	48
Shell:			
Ceaser	11-7-6	2	544
Glass	26-7-6	1	7
Hotulka	23-7-6	5	636
Johnson	13-7-6	4	845
Sinclair:			
Blanton	11-7-6	1	210
Cosar	36-8-6	3	736
Haney	12-7-6	1	Off
Tewee	14-7-6	2	697
Pompey	24-7-6	1	88
Skelly:			
Carl	14-7-6	2	1,040
Snowden-McSweeny:			
Tiger	13-7-6	2	42
Superior:			
Pulutka	31-8-6	1	2
Texas:			
Brooks	25-8-6	1	7
Coker	1-7-6	3	76
Janey	11-7-6	6	551
Texas-Independent:			
Hotulka, D.	23-7-6	7	854
Hotulka, H.	22-7-6	2	112
Tidal:			
House	1-7-6	1	323
Johnson	1-7-6	1	Off
Twin State:			
Lowe	25-8-6	1	26
Total		360	47,168

East Little River Pool

Company, farm—	S.T.R.	Wells	prod.
Amerada:			
Chilcoat	4-7-7	1	331
Continental et al:			
Harrison	4-7-7	5	1,243
Gypsy:			
Payne	5-7-7	6	2,177
Walker	5-7-7	3	839
Magnolia:			
Brame	8-7-7	2	1,491
Reed, E. M.	31-8-7	1	28
Scipio	4-7-7	1	4
Wolf	20-8-7	1	9
McCulloch et al:			
Harrison	4-7-7	1	Off
Mid-Continent:			
Smith	5-7-7	13	5,500
Yarhola	9-7-7	1	844
Prairie:			
Smith	5-7-7	3	2,230
Prairie-Slick:			
Carr	9-7-7	1	4
Harjo, K.	8-7-7	1	69
Tiger	8-7-7	2	63
Producers & Refiners:			
Lusty	5-7-7	1	16
Saketke	9-7-7	1	19
Thomas	5-7-7	2	578
Sinclair:			
Phillips	5-7-7	8	4,328
Texas:			
Chilcoat	4-7-7	2	1,203
Total		56	20,976

Carr City Pool

Barnsdall:			
Coker	11-8-5	9	988
Fife	14-8-5	2	85
Barnsdall et al:			
Tulley	10-8-5	1	87
Carter:			
Coker	2-8-5	4	389
Rogers	2-8-5	3	2,514
Empire:			
Cluck	11-8-5	13	2,278
Gypsy:			
Coker, Chippy	2-8-5	1	1,169
Fife	14-8-5	1	12
I. T. I. O.:			
Tulley	10-8-5	1	3
Magnolia:			
Fee	11-8-5	3	201
Killings	14-8-5	1	5
Prairie:			
Billington	11-8-5	10	736
Mitchell	15-8-5	1	57
Sinclair:			
Bean	11-8-5	5	230
Harjo, L.	11-8-5	4	301
Total		59	9,055

Maud Pool

Amerada:			
Ballard	1-8-4	1	41
Fehlig	7-8-5	1	32
Gossland	8-8-5	3	38
Gravel	1-8-4	1	8
Hallum	1-8-4	4	551
Smith	8-8-5	1	250
Amerada-Barnsdall:			
Wallace	17-8-5	4	94
Amerada-Hull:			
Green	20-8-5	3	34
Continental-Shell:			
Everett	18-8-5	2	25
Empire:			
Smith	8-8-5	2	289
Gypsy:			
Bourassa	7-8-5	4	43
Gossland	9-8-5	3	405
Miller	18-8-5	8	154
Independent:			
Harding	18-8-5	4	114
I. T. I. O.:			
State Land	16-8-5	1	62
Laurel O. & G.:			
Billington	18-8-5	3	110
Magnolia:			
Billington	8-8-5	3	47
Green	20-8-5	3	59
Magnolia-Gypsy:			
Smith	20-8-5	1	31
McMan:			
Roberts	9-8-5	1	200
Mid-Continent:			
Shelton	18-8-5	3	15
Phillips:			
Hudson	19-8-5	3	88
Wallace	17-8-5	1	15
Pine:			
Lingerfelt	18-8-5	2	130
Smith	8-8-5	2	173
Prairie:			
Campbell	18-8-5	8	77
Jordan	9-8-5	1	23
Prairie et al:			
Villines	20-8-5	1	2
Pure:			
Lindley	18-8-5	8	92
Urbanskey	19-8-5	2	20
Wiley	8-8-5	4	381
Shell:			
Jordan	9-8-5	4	772
Sinclair:			
Bellars	19-8-5	10	300
Calvin	7-8-5	3	80
Lewis	6-8-5	2	30
Smith	9-8-5	1	80
Skelly-Lenox:			
Green	20-8-5	1	105
Skelly-Margay:			
Lingerfelt	18-8-5	4	69
Texas:			
Calvin	7-8-5	9	130
Tidal:			
Dunn	12-8-4	1	38
Everetts	18-8-5	2	31
Smith	8-8-5	1	15
Twin State:			
Colvin	7-8-5	2	56
Wilcox O. & G.:			
Smith	8-8-5	8	352
Total		136	5,661

Mission Pool

Amerada:			
Rice	5-8-6	2	1,265
Carter:			
Fuswa	18-8-6	3	405
Micco	8-8-6	2	95
Carter-Denver P. & R.:			
Melissa	9-8-6	1	425
Continental:			
Maines	7-8-6	4	272
Darby:			
Judy	1-8-5	1	39
Gypsy:			
Baby	6-8-6	1	14
Barkus, N.	6-8-6	10	1,934
Barkus, S.	7-8-6	1	7
Dosar	7-8-6	5	716
Gypsy:			
Hardy	7-8-6	5	469
Harjoche	7-8-6	3	4
Micco, L.	8-8-6	2	17
Mission	5-6-8-6	7	954
Mosar	1-8-5	4	293
Independent:			
Lawson	1-8-5	5	421
Independent-Kistler:			
Payne	7-8-6	3	704
McMahon:			
Harjo	7-8-6	2	649
Mid-Continent:			
Ripley	23-8-6	1	108
Minnehoma:			
Neal	7-8-6	4	443
Pine, W. B.:			
Harjo	6-8-6	3	935
Micco	8-8-6	1	25
Prairie:			
Crain	7-8-6	1	22
Melton	6-8-6	3	463
Micco	5-8-6	1	5
Townsend	6-8-6	2	321
Prairie-Gypsy:			
Owens	18-8-6	2	48
Prairie-Slick:			
Nelly	12-8-5	1	86
Shaffer:			
Weaver	12-8-5	3	732
Shell-Continental:			
Hearndon	7-8-6	3	79
Shell-Papoose:			
Maines	7-8-6	8	769
Sinclair:			
Harly	7-8-6	4	463
Judy	1-8-5	1	22
Tidal:			
Nellie	12-8-5	5	1,274
Twin State:			
Hayes	8-8-6	2	679
July	6-8-6	2	18
Ripley	12-8-5	2	39
Total		110	15,214

Bowlegs Pool

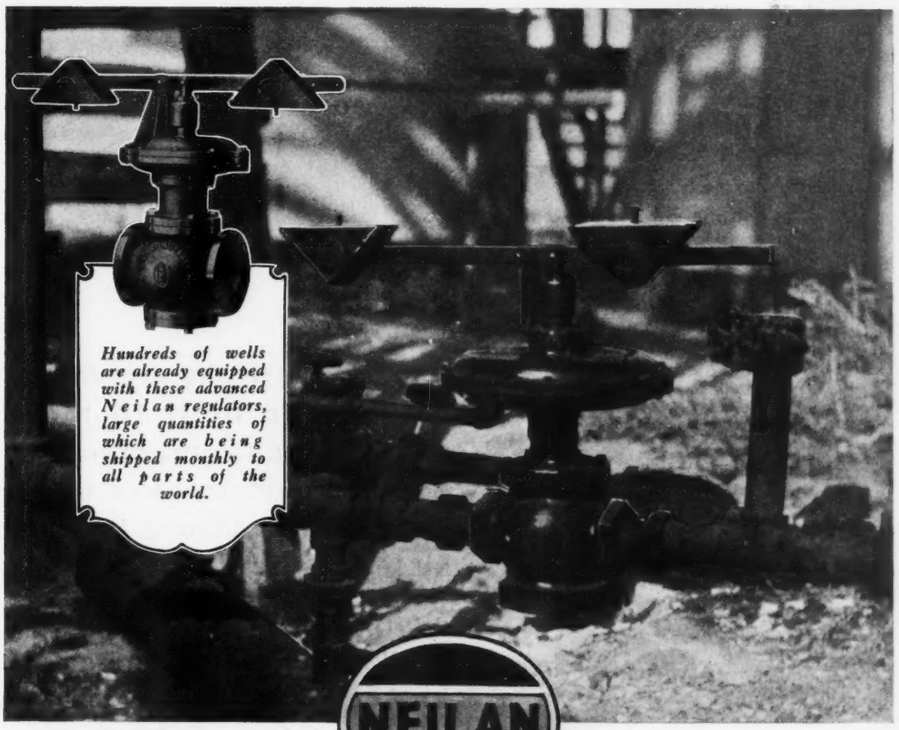
Amerada:			
Rascoe	15-8-6	6	300
Atlantic:			
Baker	10-8-6	4	148
Fleet	23-8-6	3	65
Grayson	13-8-6	3	371
Jones "A"	16-8-6	2	11
Barnsdall:			
McNac	28-8-6	1	18
Morrow	11-8-6	4	137
Carter:			
Bowlegs, I.	15-8-6	4	237
Burden	23-8-6	2	181
Harjoche	14-8-6	6	336
Hilly, D.	23-8-6	3	180
Jones	11-8-6	4	363
Walker	16-8-6	4	273
Wise	23-8-6	11	930
Dixie:			
Lizzy	11-8-6	1	5
Empire:			
Lacey	14-8-6	6	173
Wise	23-8-6	2	97
Gypsy:			
Cumsey	10-8-6	4	311
Grayson	13-8-6	4	327
Harjoche	10-8-6	3	168
Jones	11-8-6	1	24
Walker	15-8-6	7	724
Wise	23-8-6	2	88
I. T. I. O.:			
Barnett "A"	24-8-6	1	13
Barnett "B"	23-8-6	1	3
Billington	22-8-6	3	232
Bowlegs	22-8-6	9	843
Davis	13-8-6	4	27
Fay	13-8-6	9	493
Goforth	15-8-6	12	1,242
Livingston	15-8-6	10	1,070
Lizzie	11-8-6	3	256
Walker	15-8-6	8	787
Williams	12-8-6	1	180
Wilmot	15-8-6	4	303
Work	24-8-6	1	52
Youngblood	24-8-6	1	9
Magnolia:			
Davis, B. F.	13-8-6	3	212
Davis, M.	13-8-6	1	93
Hammond	10-8-6	8	477
Rhodes	12-8-6	5	264
Vanburskirk	9-8-6	4	214
McCulloch:			
Bowlegs	22-8-6	1	11
Mid-Continent:			
Baker	10-8-6	4	108
Smith	12-8-6	6	422
Minnehoma:			
Bowlegs	13-8-6	1	13
Prairie:			
Gahagan	23-8-6	3	56
Harber	10-8-6	8	707
Jones, G.	11-8-6	3	168
Jones, N.	3-8-6	1	114
Templeton	12-8-6	4	1,152
Whitney	23-8-6	4	230
Pure:			
Reed	14-8-6	14	1,288
Strothers "D"	14-8-6	4	244
Strothers "E"	10-8-6	7	1,032
Shaffer:			
Lacey	14-8-6	3	310
Shell-Houston:			
Taylor	16-8-6	4	Off
Sinclair:			
Cumsey	10-8-6	4	646

(Continued on Page 114)

NEILAN

Casing Head Gas Regulators give

POSITIVE PRESSURE CONTROL ON FLOWING WELLS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NEILAN

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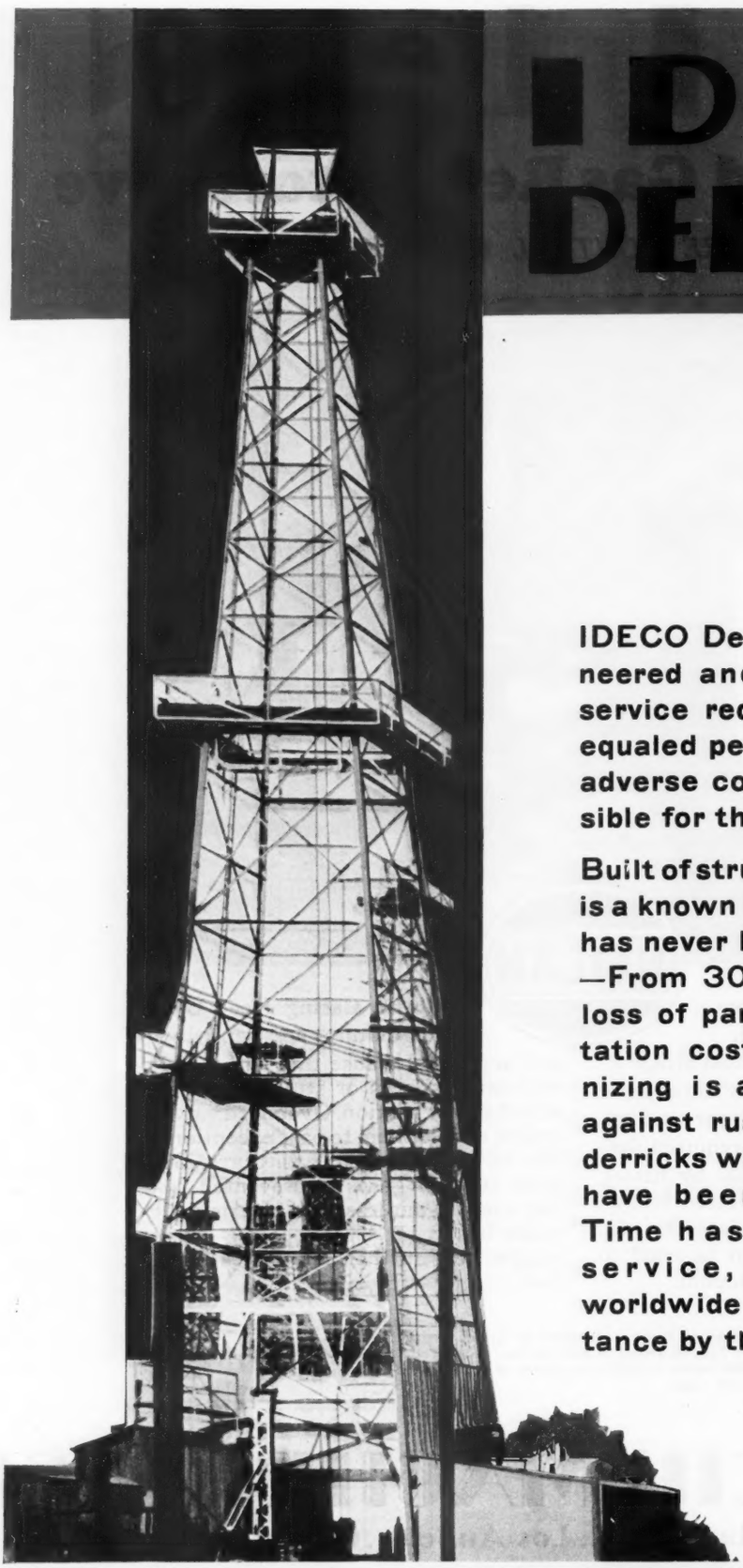

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Built of structural steel, their strength is a known factor—The derrick design has never been successfully imitated—From 30 to 60% less parts saves loss of parts, erection and transportation cost—and the hot dip galvanizing is a successful protection against rust and corrosion. DECO derricks will be in use long after they have been written off the books. Time has proven their economy—service, their practicability—and worldwide use, their universal acceptance by the oil industry.

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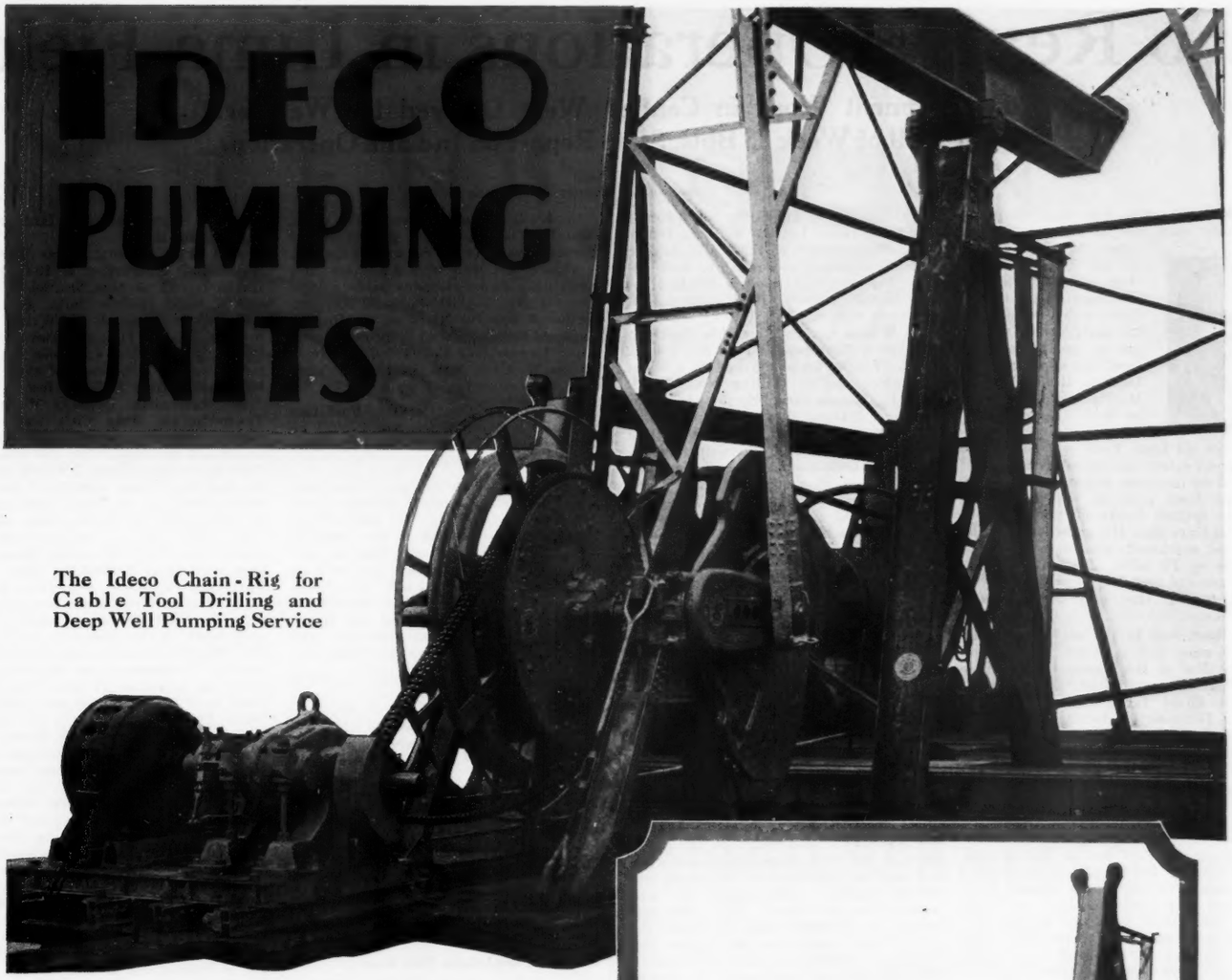

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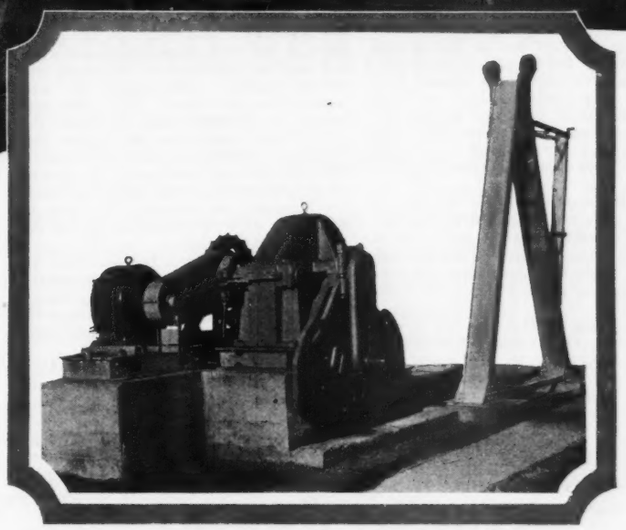
IDECO offers a complete and modern line of deep well Pumping Units. Embodied in their design are all of the features required for present-day deep pumping conditions.

Adaptable for use with electricity, steam or gas power, they combine strength and durability, which keep them on the job and reduce shutdown time; and efficiency and low power consumption, which lower the operating expense. Balance of rods and fluids is obtained through the use of the IDECO crank counter balance, which eliminates rod troubles. Nothing has been overlooked in these units to make them right—May we furnish you with further information?



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To Revive Operations in Lima Field

Development Work in Central West Delayed by Weather. Best Well of Week 25 Bbls. State Report on Indiana Operations

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Feb. 17.—While development work has slackened to a large extent in all divisions of the Central West, there is a heavy leasing campaign on in all the fields, which means that the early spring should see a great improvement, not alone in Ohio, Indiana, Illinois, but in Michigan and Kentucky as well. According to talk of some of the operators the old Lima Field will be revived to a great extent, as numerous wells are planned on the outer edges of the present Trenton Rock area, as well as within the old defined limits of the big field which is more than 100 miles long, northeast and southwest, and in some areas as wide as 75 miles. There is a large inside acreage that has never been given a fair testing, that may develop some nice wells.

The best well in the old Lima Field for the week was a 25-bbl. initial producer drilled by the Keaser Oil Co., 600 feet from the south and west lines of the Joe Ernst farm, SW Section 31, Liberty Township, Hancock County, and near Findlay. Top of Trenton was found at 1,330 feet and total depth of 1,395 feet or 65 feet in the sand.

In the Tiffin Field, Liberty Township, Seneca County, McPherson and others' test in the southwest corner of the Samuel Hull, NW Section 1, was dry at a total depth of 1,526 feet or 102 feet in the Trenton. In Pleasants Township, same county, Pfeister and others' test, 1,000 feet from the south and east lines of the John Beck farm, SE Section 19, topped the Trenton at 1,441 feet, and drilled 98 feet in the sand to a total depth of 1,539 feet, but failed to find any oil or gas.

C. V. Darrow drilled No. 6 well on the F. A. Stratton farm, SE Section 10, Liberty Township, Wood County, which pumped 5 bbls. initial. Trenton was topped at 1,201 feet and drilled 284 feet in the lime to a total depth of 1,485 feet.

At a meeting of the Oko Oil & Gas Co., of Lima, Ohio, Mack P. Colt was re-elected president; M. J. Lynch, vice president and Harry L. Pew, secretary-treasurer. Directors of the company are R. J. Plate, W. C. Parmenter, W. L. Reid, M. C. Colt, J. H. Goekemall of Lima; H. M. McClure, Mendon and H. S. McLeod, Delphos.

CENTRAL OHIO

In the Central Ohio Field there were 13 completions reported of which 2 were producers with an initial production of 114 bbls., 5 dry holes and 6 gas wells, while in new work started there were 16 locations and 21 wells rigging up and spudding, a total of 37. Weather conditions have been bad and there will be no great rush in work until conditions become such that drilling operations can go along without frozen ice on the cables that often means long fishing jobs.

In Ashland County, but one well was reported completed, M. S. Burtner's No. 1 T. B. Stauffer farm, Section 36, Vermillion Township, which failed to find any sand at a total depth of 3,025 feet and goes as a dry hole. Robinson and others are drilling a second test on the John S. Moffett farm, Section 30, same township. Ohio Fuel Gas Co. is drilling No. 2-5,015 G. W. Guthrie farm, Section 10, Greene Township.

In Lorain County no completions were made, only new work starting. In Carlisle Township, the Daugherty Co. mode a location on the J. M. Strong, Lot 13, and the Wiser Oil Co. is drilling No. 1 Joseph Dewhurst farm, Lot 5. William Dempsey made a location on the Joseph Snyder, Lot 32, Ridgeville Township, and the Ohio Fuel Gas Co. made a location for No. 1-5,034 Edward P. Wilhelmy, Lot 31, same township.

In Wayne County, the Ohio Fuel Gas Co. has a light gas well in No. 1-4,982 C. E. Wearhy farm, Section 23, Chester Township, and is drilling No. 1-5,011. Sam C. Martin farm, Section 18, same Section. Harmon & George are drilling No. 3 on the C. Peter Buckholtz, Section 26, and Faulkner and others drilling No. 3 E. D. Donaldson, same section and township.

In Holmes County, Monroe Township, the Lydic Oil & Gas Co. is drilling No. 3 A. R. Mackey farm, Lot 6, Monroe Township. Ohio Fuel Gas Co. is drilling No. 1-4,906 on the D. J. L. Miller, Sections 20 and 21, Paint Township.

In Richland Countyy, Worthington Township, Ohio Fuel Gas Co. is drilling No. 1-4,983 on the John M. Hay farm, Section 24.

In Knox County, Brown Township, Ohio Fuel Gas Co.'s No. 2-4,934 on the Herbert Frank farm, Sections 5 and 12, is a good gas well in the Clinton lime formation. Same company made a location for No. 5-5,035 John P. Koppert, Section 4, also for No. 6 on the Ray R. Koppert, Sections 4 and 7, Brown Township. Upham Gas Co. is drilling No. 3 George W. Criss farm, in Butler Township, same county.

In Coshocton County, Ohio Fuel Gas Co. made a location for No. 1-5,025 on the Lewis B. Reiss farm, Sections 8 and 9, Monroe Township.

In Summitt County, Greene Township, F. A. Brendall and others brought in an excellent gas well on the Shook-Waggoner farm, Section 19, in the Newberg sand from 3,451-58 feet. Lighton and others also got an excellent gas well on the O. H. Greenho, Section 7, same township, at from 4,018-50 feet. East Ohio Gas Co. made a location on the Henry Steese, Section 21, same township, and the Stolz Oil & Gas Corp. is drilling No. 2 on the Katherine Selzer farm, Section 7, same township.

In Licking County, Perry Township, the Hope Construction & Refining Co. staked out three new locations, Nos. 5 and 6 Sarah Rector farm, Section 9, and No. 6 on the J. C. Wright farm, Section 15. In Hanover Township, the Pure Oil Co.'s No. 4 Homer C. Priest farm, Section 7, is reported good for 87 bbls. initial from 2,822-57 feet.

In Muskingum County, Washington Township, the Atha Co.'s test on the Noah F. Swank farm, in the fourth quarter, was a dry hole. The test found the Clinton formation from 3,996-99 feet and the Red Rock from 4,086-4,118 feet. In Falls Township, the Athey Drilling Co.'s No. 3 Edward D. Walker farm, was dry from 3,645-3,745 feet, and the same company's No. 1 W. H. Athey farm, same area, dry from 3,668-3,774 feet. Ohio Fuel Gas Co. made a location on the B. O. Taylor farm, same township. In Clay Township, the most active development work in this county is under way. The Wehrle Oil & Gas Co.'s test on the Howard Tewksbury farm, Section 3, produced an initial of 27 bbls. from 3,463-3,521 feet, total depth of hole 3,523 feet. Noah Andrews and others are starting No. 2 on the State Brick Plant, same Section. John Wallsmith and others are starting No. 1 E. H. Norman, same section. Crawley and others are getting ready to start No. 2 on the Nelson McCoy Co. lease, same section, and William Kline and others are drilling No. 3 on the Ramsbottom Pottery Co.'s lease, same section. In Perry Township, same county, Wittmer Properties, trustee, is drilling on the John Thomas heirs, Section 5, and the Atha Co. made a location on the L. M. Bryan farm, Section 20. In Newton Township, the Ohio Fuel Gas Co. is drilling No. 1-4,980 on the Lloyd R. McCoy farm, Section 33, and Abe Snider and others are drilling on the Tom Bride farm, Section 34, same township.

In Athens County, Ames Township, the Ohio Fuel Gas Co. is drilling No. 3-4,953 Robert G. Brawley farm, Fractional Section 3. In Rome Township, the Coolville Oil & Gas Co. has a light gas showing on the Mary E. Frost, Section 31, at 1,050 feet.

Tuscarawas County

In Tuscarawas County, Washington Township, the Capital Drilling Co. found a nice gas producer on the C. R. and M. A. Poulson farm, Sections 32 and 33, in the Niagara formation from 3,538-3,727 feet, total depth 3,740 feet. Ohio Fuel Gas Co. is drilling No. 1-4,975 on the Anna Meek farm, Lot 31, same township.

In Stark County, Lawrence Township, Norwood Johnson's test on the Peter Kalesar farm, Section 8, only had a light gas showing and was abandoned as dry at from 4,050-68 feet where broken sand was found. Penn Oil & Gas Co. made a location on the A. Ginther farm, Section 3, same township.

In Guernsey County, Adams Township, George McLaughlin is drilling a second test on the Charles Tompkins farm, Section 10.

In Belmont County, Somerset Township, William C. McBride is drilling on the Grant Hadsell farm, Section 1.

In Morgan County, York Township, the Ohio Fuel Gas Co.'s No. 2-4,853 on the R. S. Cosgrove, NW Section 24, was dry, and was drilled to the Medina formation at 4,000 feet. Ohio Fuel Gas Co. made a location for a second test on the W. P. Chappelear farm, Section 26, Malta Township. Same company has an average gas well in No. 2-4,998 on the A. B. Miller, Section 16, Penn Town-

(Continued on Page 180)

OWENSBORO SHUTDOWN EXPIRES TO BE FOLLOWED BY NEW ACTIVITY

By Whit
Staff Correspondent, Kentucky-Tennessee

OWENSBORO, Ky., Feb. 15.—The 60-day shut-down movement of the operators in the Owensboro Field expires today, and by the close of the month numerous shallow wells should be well toward the pay sands. Pipe line conditions are in better shape to handle the output that comes from the shallow territory in both Ohio and Daviess Counties. The field did not show much of a falling off in production, as the runs from western Kentucky for January were close to what they were for any month during the past several months.

The shut down gave the operators an opportunity to spend some time looking over the territory south of the Rough River fault and reports are that thousands of acres which several months ago went begging, have been signed for lease.

According to reports the Illinois Pipe Line Co. handled from the Owensboro area during January 275,775 bbls., and from the entire western Kentucky fields a total for the month of 303,273.85 bbls. The Producers Pipe Line Co. handled in the Owensboro area for January a total of 76,000 bbls., against 87,000 bbls. for December.

The new extension of the Illinois Pipe Line Co., from the Utica Field in Daviess County to the Niagara Field in Henderson County, is almost completed, and the 1,400 bbls. of oil now in storage in the field will be moved through the line. This new field should show a rapid development, and it is only a question of a few days until all wells in the Niagara Field are ready to be connected. Some will be given shots and cleaned out which will increase the daily output, and up to the present wells of good production have been found in the field which ranks well with other producing areas of the western part of the State, and will get a heavy drilling campaign, as several of the larger companies hold blocks of acreage in and around the pool. The Illinois Pipe Line Co. is ready to meet the convenience of prospective customers when there is sufficient production in sight to justify the heavy expense of extending the line, and the Henderson County (Niagara Field) appears to be sufficient to justify the line. This will make a rapid development in the Niagara Field when revenues from the activities heretofore carried on begin to come in. Among some of the operating concerns in the Niagara Field are the Wittmer Oil & Gas Co., H. Z. Clark & Co., Southern Oil Producing Co., C. E. Daugherty and others, Black Gold Oil Co.

Completions But Few

Only a few completions are reported from any of the Kentucky regions. One of the most important is the test drilled by McMahan and Dahlgren, or the Wha-Sha-Shee Oil Co., on the Roy Hudson farm, a couple of miles southeast of the Hayden Pool, in the southern angle of Daviess County near the McLean and Ohio County line, approximately 6 miles to the northwest of the Barnett's Creek Church Pool, in Ohio County. The well found oil at a total depth of 1,001 feet, there being 20 feet of Jett sand, where the well is reported good for 25 bbls. which may be increased when given a shot. The Stray sand was found at 660 feet, where 10 feet was passed through but did not show enough to make a worth while producer, therefore was drilled to the Jett sand. The Hudson well is in the vicinity of Maxwell.

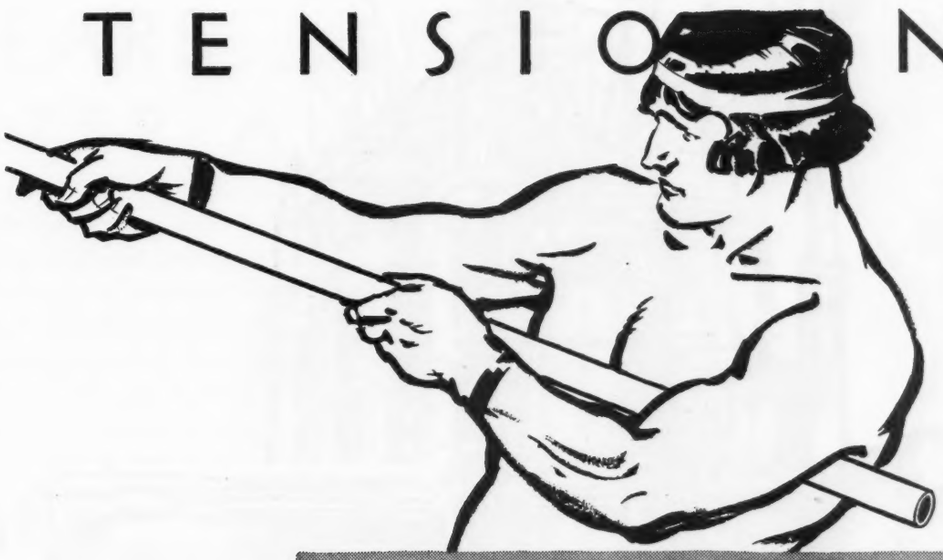
Another completion is reported from the Daviess County area, the Mecca Oil Co.'s No. 4 Neal farm, which was dry at 542 feet.

In Ohio County, in the Friendship Church Pool, T. P. Royal and others' No. 12 on the T. P. Royal 60 acres, produced an initial of 50 bbls. from the Barlow sand. In the same area, the Louisville Gas & Electric Co.'s second test on the E. M. Royal farm, developed a dry hole at 900 feet. Jenkins and others also got a dry hole in the second test on the Sis Bellamy lease, same county.

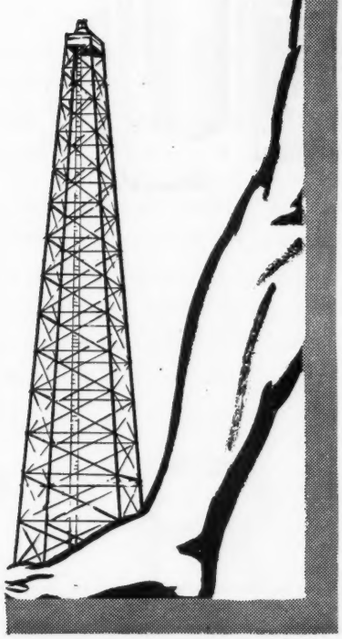
Ten miles north of Bowling Green, in Warren County, Morrow & Hays drilled in No. 11 on the E. Morgan farm, which produced 5 bbls. initial from the shallow 528-foot sand.

In the eastern part of Kentucky, in Jackson County, the Petroleum Exploration Co.'s No. 3 on the Wolfork Land Co.'s lease, came in a dry hole. No. 4 on the same lease is under way.

TENSION



Seamless for Safety



EXTRA STRESS . . .

demands the extra strength of

PITTSBURGH SEAMLESS

THE extra strength of its uniformly tough steel enables Pittsburgh Seamless Casing to withstand tension and to hold together far beyond the breaking point of ordinary pipe. Many actual experiences . . . particularly in deep well drilling . . . have tested this extra strength to the utmost and definitely established the superior tension resistance of Pittsburgh Seamless.

The deeper the well, the longer the string; and the longer the string, the greater the weight and tension. You need the extra strength of Seamless right down the line, because it means extra safety as well.

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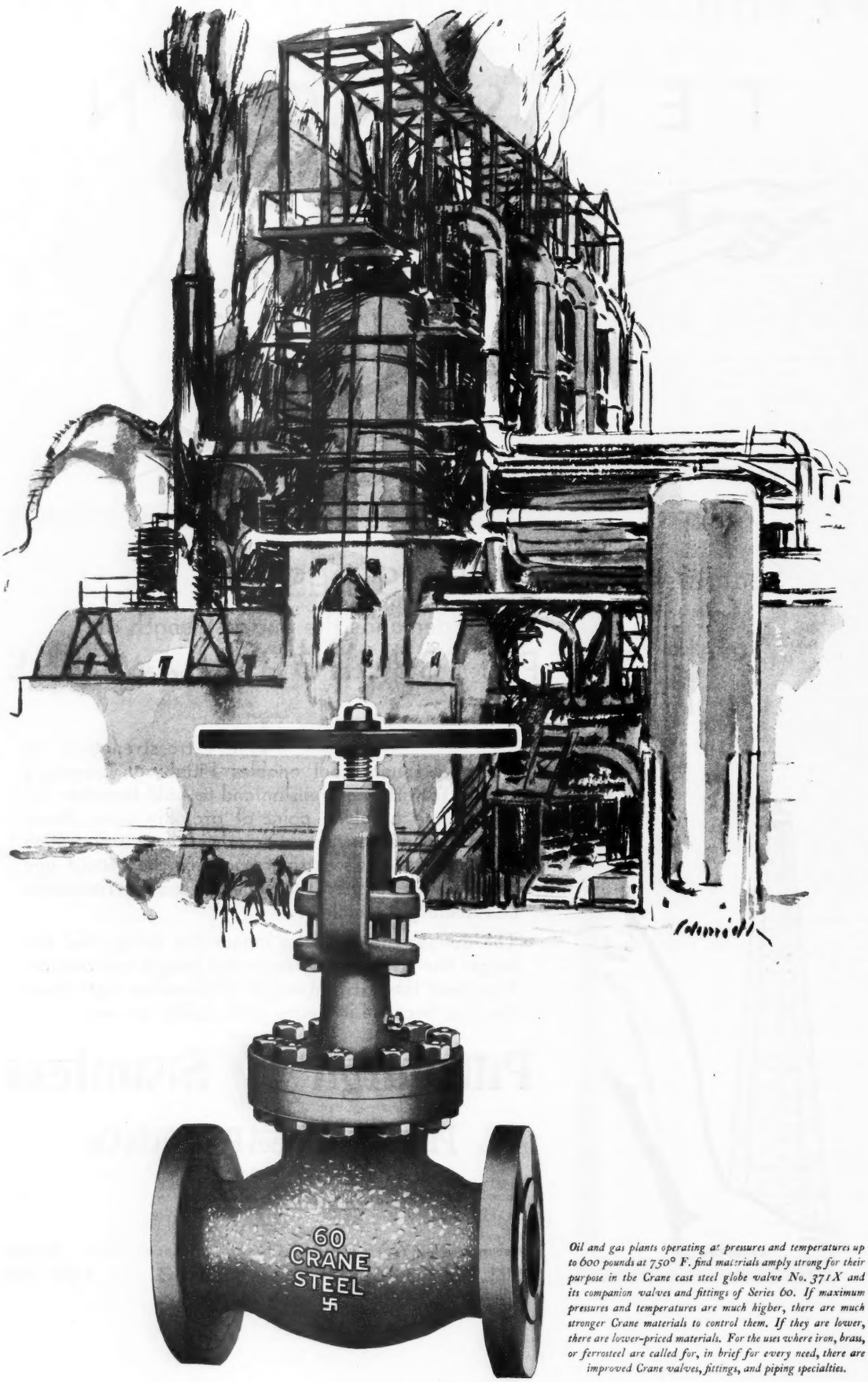
DRILL PIPE ◆ CASING ◆ TUBING ◆ LINE PIPE



Oil and gas plants operating at pressures and temperatures up to 600 pounds at 750° F. find materials amply strong for their purpose in the Crane cast steel globe valve No. 371X and its companion valves and fittings of Series 60. If maximum pressures and temperatures are much higher, there are much stronger Crane materials to control them. If they are lower, there are lower-priced materials. For the uses where iron, brass, or ferrosteel are called for, in brief for every need, there are improved Crane valves, fittings, and piping specialties.

AFTER 7 YEARS . . . STILL A STEP AHEAD

1855
SEVENTY-FIFTH
ANNIVERSARY
1930

Ever willing to experiment, to seek new fields and new processes, oil and gas men have been the shock troops that have led the general advance of industrial pressures and temperatures. When the rank and file of industry reached pressures of 600 pounds at 750 degrees, they were inclined to think they had reached the limit. Now, oil men are successfully using cracking still pressures of 1500 pounds at 900° F . . . with even higher in prospect.

Marching step by step with these modern adventurers, Crane Co. has never failed to provide safe and serviceable materials for any genuine need of oil and gas men. From its regular line, it supplies materials to control hot oil pressures up to 1350 pounds at 900 degrees and makes special materials for ratings considerably in advance.

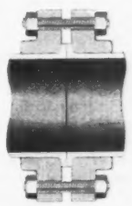
But even in the oil and gas industries, ordinary needs are usually lower. Amply strong and even overstrong for many uses are the Crane Series 60 cast steel valves and fittings for 600 pounds at 750°.

Though Crane Co. made valves and fittings for these pressures and temperatures much earlier, the 60 Series was placed in the regular stock seven years ago. It is a matter of pride with us that, though with Series 90, Series 150, and special materials for unusual requirements, we have far outdistanced the Series 60 line in strength since, they are still a step ahead of all but exceptional needs.

Whether gas or oil men are looking for the best materials for out-of-the-ordinary jobs or for the most economical ones for a more ordinary purpose, they save money and time by coming to Crane Co. Whatever your piping problem, our specialists stand ready to give you the benefit of the 75 year Crane experience and reputation. Call on us.

No. 246-H Steel to Monel Metal Screwed Union

No. 845-D Series 60 Flanged Ell



No. 859-E Forged Steel Cranelap Flange

CRANE

PIPING MATERIALS TO CONVEY AND CONTROL STEAM, LIQUIDS, OIL, GAS, CHEMICALS

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO
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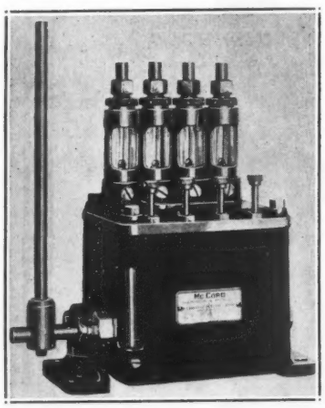
EQUIPMENT AND SUPPLIES

SIGHT GLASS PROVIDED BY McCORD LUBRICATOR

The McCord Radiator & Manufacturing Co., Detroit, Mich., is introducing a mechanical lubricator which provides a direct visual check on the oil that is being forced to the point of lubrication. The sight glass for each feed is placed in the discharge line and shows the oil after it has left the lubricator mechanism and is on its way towards the engine part for which it is intended. Clear water (or



glycerin), which is heavier than the lubricating oil, stands in the transparent glass column. It is prevented from draining back by dual steel-ball check valves which also serve as discharge valves for the forcing and metering pump.

A thin wire running through the center of the glass tube guides each drop of oil upward as it leaves the pump. These drops collect in a small pool that floats on the surface of the water and extends upward through the entire length of the discharge line. Each pump impulse raises the column of water slightly and forces exactly the amount of oil corresponding to the pump displacement out through the discharge line. The oil which has been forced into the glass column from the pump thereupon climbs up the wire like a spider on its thread and is added to the oil-pool standing above the water. The water level then falls slightly again by an amount corresponding to the oil that has floated up through it.

Positiveness of oil delivery corresponding to the timing and displacement of the forcing plunger follows from the fact that both the water and the oil are incompressible at the pressures encountered. As far as the delivery point at the end of the lubricating line is concerned, it makes no difference how many kinds of incompressible fluids are contained in it, so long as air and gases are excluded. Sighting of the oil is accomplished through a solid, incompressible column of water, into which no air can enter. Every cam impulse positively forces out the metered quantity of oil at the point of delivery.

The lubricator may be operated by means of a ratchet, direct pulley, worm-and-wheel, or spur gears, either one of the last two forms of drive being necessary in order to take advantage of the positive timing feature. Each pumping unit with sight glass is removable at an instant's notice by disconnecting the discharge line and loosening a single holding screw. The entire group of units may be removed together by lifting the cover of the lubricator tank. While this lubricator has been designed particularly for use on large gas and Diesel engines it can be used with equally good results wherever a machanical force feed lubricator is required.

SLOGAN CONTEST ENDS

In the slogan contest held by the Merco Nordstrom Valve Co., 11,275 slogans were received. The company offered $500 in prizes for the best slogans pertaining to Nordstrom valves and contributions were received from every state in the Union and several hundred from foreign countries. The grand award was given to J. L. Pillow, of the Standard Oil Co., Baton Rouge, La., who contributed, "Nordstrom—The Perfect Application of a Principle." The second award was made to G. E. Genung, Detroit, Mich., "Hydraulic Lubrication Insures Effective Manipulation."

BAKER CEMENT DEVICES LESSEN WELL TROUBLES

Baker cement floating, guiding and cementing equipment is designed, according to the manufacturer, Baker Oil Tools, Inc., to eliminate sidetracking jobs, fishing jobs and other troubles connected with drilling operations.

The Baker-Burch cement float shoe is a plain casing shoe with a Baker-formula concrete guide-shaped plug, cast and anchored in rounded grooves in the shoe. The plug contains the Baker designed celoron ball check valve and valve seat. Baker-formula concrete has a compressive strength of 6,002 pounds to the square inch. Baker celoron will withstand 5,500 pounds to the square inch. The entire mass of concrete and celeron may be drilled out easily and completely, and circulated away freely, leaving the hole clean for any subsequent operations.

The Baker-Burch side hole cement float shoe is a variation of the regular Baker-Burch cement float shoe, designed to meet the demand for a float shoe which will not plug the circulation when a long string has been set solidly on bottom. It is said by the manufacturers to offer the following advantages: Free and easy circulation at all times; circulation obtained even though the shoe is set solidly on bottom and cannot be raised; circulation not shut off when the hole is tight at the bottom; better circulation when shoe is in heavy or sandy mud than is otherwise possible; a more even distribution of the cement around the casing and shoe, and the cement less likely to channel.

The high side hole cement float shoe is designed to meet unusual conditions demanding a float shoe of greater length than the standard. It has an overall length of 44 inches, with the side holes placed 28 inches from the bottom of the guide. This gives ample distance between the bottom of the guide and the side holes to overcome conditions which would make a float shoe of standard length ineffective. Where the hole is tight or where there is a settling of sand or mud into which a long string would sink the high side hole float shoe increases the safety factor.

The Baker cement float collar is a Baker-formula concrete plug cast and anchored in rounded grooves in a special seamless steel coupling, 20 inches in length. The concrete plug contains the Baker designed celoron ball check valve and valve seat.

In the Baker cement guide shoe Baker-formula concrete is cast and anchored in rounded grooves in a standard plain casing shoe, usually with a 2½-inch hole for a strong wash-down action.

The Baker cement baffle collar—with hole—consists of a baffle or plug of Baker-formula concrete cast and anchored in rounded grooves in a heavy, seamless steel coupling, 16 inches in length. Practically the entire space between the threads is filled by the concrete baffle, giving great strength and resistance against impact or pressure. A 2½-inch hole is standard.

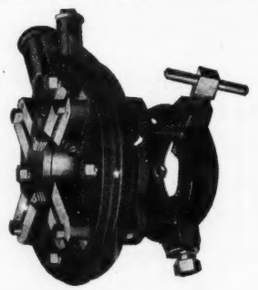
TWO NEW CHAINS ON MARKET

Two new chains, Union No. 1,240 RXX, A.P.I. No. 4, and Union No. 1,190 RXX, A.P.I. No. 3, otherwise known as the "Tool Pusher" and "Roughneck" have been placed on the market by the Union Chain & Manufacturing Co. of Sandusky, Ohio. According to R. C. Brand, director of sales in the oil industry for the company, the two chains were designed especially for high-speed rotary drilling on deep wells. The pins used in the A.P.I. No. 4 are fifteen-sixteenths inch in diameter and those in the A.P.I. No. 3 are eleven-sixteenths inch each, being one-sixteenth inch heavier than pins previously used in A.P.I. chains of similar sizes. The side bars are larger than heretofore used and are said to possess greatly increased strength. The No. 1,240 RXX has an average strength of 145,000 pounds, while that of the 1,190 RXX is given as 72,000 pounds. The new chains, together with other Union A.P.I. chains are stocked at all Frick-Reid Supply stores.

NEW STYLE OF BEAVER TOOLS ON THE MARKET

The Borden Co., Warren, Ohio, manufacturer of Beaver pipe tools, has announced that these tools may be had new in either the self-contained type of die stock or in the separate-die type (Nos. 8 and 8R).

The new Beaver four-posters, 8 and 8R, for threading 1 inch, 1¼-inch, 1½-inch and 2-inch pipe, use a separate set of dies for each size of pipe. Instead of loose bushings they have a self-con-



tained rear end that is said to be extremely accurate and convenient on which basic patents have been issued.

Investigation has revealed that heavier upright posts are desirable in four-post tools and for this reason the new Beavers are built with these posts extra heavy, giving greater strength and durability and correspondingly reducing trouble and repair expense. Notwithstanding the heavier grip screws and the heavier upright posts the new 8 and 8R Beavers are light in weight, the ratchet tool weighting 12¾ pounds. A simple, sturdy ratchet-pawl mechanism can be repaired by the operator if this should become necessary.

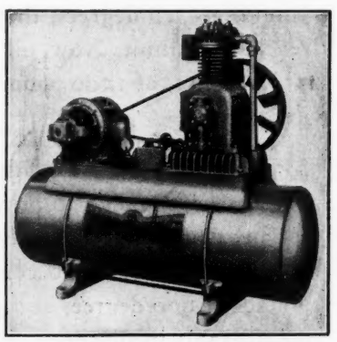
YALE & TOWNE ADDITION

The Philadelphia, Pa., branch of the Yale & Towne Manufacturing Co. announces the addition of its Stuebing hand lift truck manufacturing division. A four-story concrete building has been equipped with modern production machinery for the manufacture and assembly of Stuebing hand lift trucks and skid platforms. T. T. Ludlum, formerly in charge of the company's Holyoke, Mass., branch, will have charge of production, and R. L. Higgins, assisted by Harald H. Gade and Neil E. McLoughlin, will handle sales. Sales and service will cover the eastern Pennsylvania, southern New Jersey, Delaware and Maryland areas.

GARDNER-DENVER OFFER NEW MODEL COMPRESSOR

A new model air-cooled single-stage compressor has been placed on the market by the Gardner-Denver Co., Quincy, Ill. This model, to be known as the A-C-E, consists of a 3½ by 4 duplex compressor and a five-horsepower motor mounted on a castiron base on top of the air receivers. The unit has a displacement of 26 cubic feet per minute, operating at a rate of 600 revolutions per minute. This rate can be reduced and altered to fit circumstances.

The suction and discharge valves are enclosed in separate compartments. The



valves are special heat-treated and ground steel discs. The use of the compartments prevents the air from being heated when passing through the intake valves.

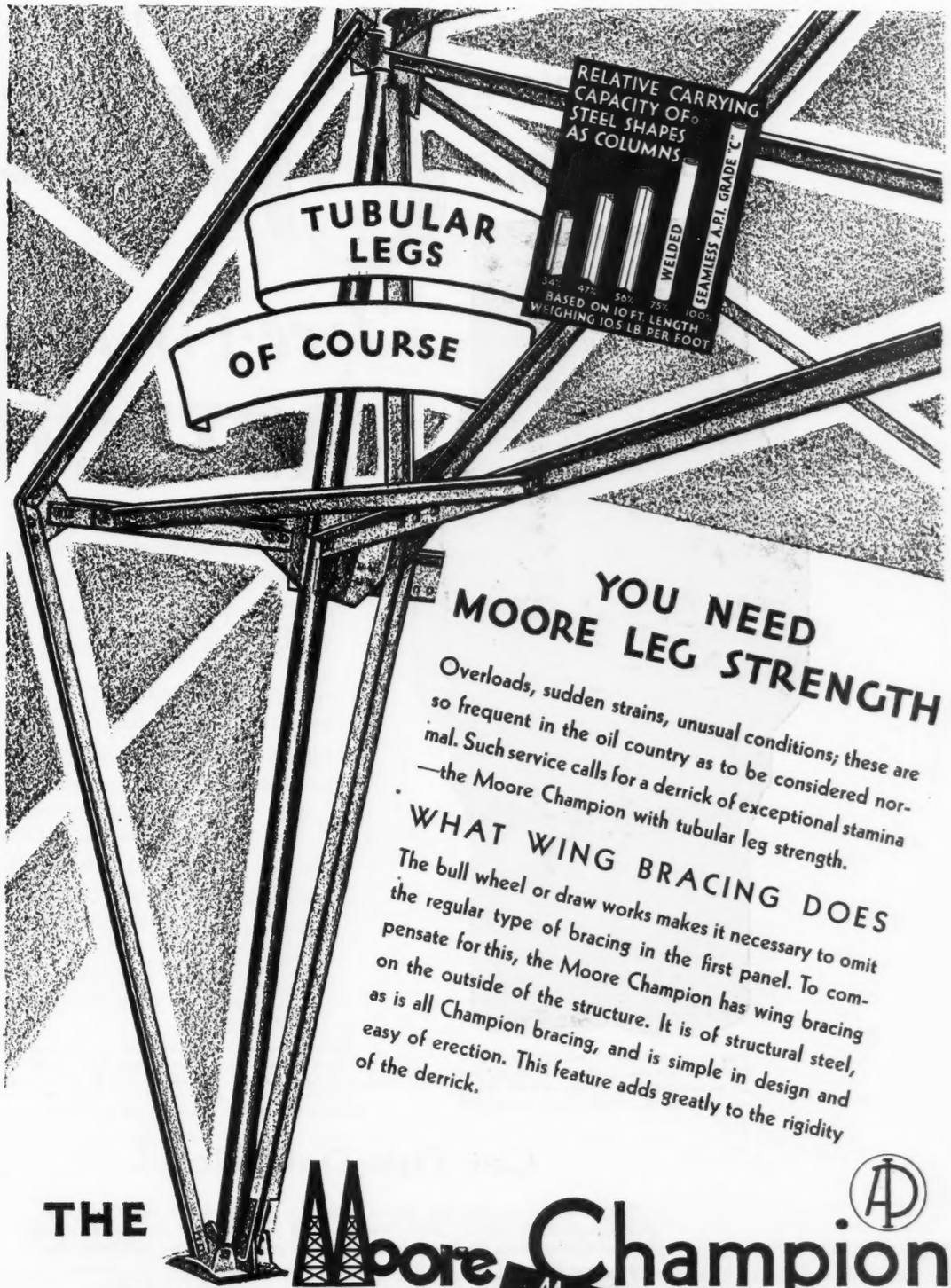
An automatic or hand-operated start-and-stop control is provided as standard equipment and operated in conjunction with the Penn type pressure and moisture unloader. The unloader is set to cut in at 130 pounds and out at 165 pounds. Continuous operation is assured by this control.

Lubrication for the compressor is of the controlled splash type. A positive driven plunger pump on the outside of the crankcase feeds filtered oil to the troughs under the connecting rods. A special oil ring and groove on the piston prevent oil from passing over to the discharge lines. An oil level gives positive indication of the amount of oil in the reservoir.

The V-type belt drive, a fan type flywheel, Hyatt roller bearings; aftercooler in the base and a muffler for the suction opening, are other features.

TRACKSON PLANS EXTENSION

In keeping with an expansion program which provides for development of a complete line of Trackson tractor equipment, officials of the Trackson Co., Milwaukee, Wis., have announced plans for the erection of a new factory early in the spring. According to W. H. Stiemke, vice president, and L. E. Dauer, sales manager, the company has obtained a site of 21 acres in Milwaukee's south side manufacturing district. The new plant will be a large one-story building providing room to consolidate under one roof the several plants which the company now operates in Milwaukee. The Trackson Co. was organized in 1923 as a division of the George H. Smith Steel Casting Co., Milwaukee, and originally manufactured only full crawlers for Fordson tractors. About a year and a half ago the company adopted a diversification program and now manufactures Trackson crawlers, hoists, shovels, loaders, bulldozers, cranes, hitches, etc., for McCormick-Deering industrial tractors, as well as for Fordsons, and the expansion program will lead to the development of a complete line of equipment for other makes of tractors.


TUBULAR LEGS
OF COURSE
RELATIVE CARRYING CAPACITY OF STEEL SHAPES AS COLUMNS
34% 47% 56% 75% 100%
WELDED
SEAMLESS A.P.I. GRADE "C"
BASED ON 10 FT. LENGTH WEIGHING 10.5 LB. PER FOOT

YOU NEED MOORE LEG STRENGTH

Overloads, sudden strains, unusual conditions; these are so frequent in the oil country as to be considered normal. Such service calls for a derrick of exceptional stamina —the Moore Champion with tubular leg strength.

WHAT WING BRACING DOES

The bull wheel or draw works makes it necessary to omit the regular type of bracing in the first panel. To compensate for this, the Moore Champion has wing bracing on the outside of the structure. It is of structural steel, as is all Champion bracing, and is simple in design and easy of erection. This feature adds greatly to the rigidity of the derrick.

THE Moore Champion DERRICK

Moore ALL STEEL RIG EQUIPMENT

LEE C. MOORE AND COMPANY, INC.
PITTSBURGH Established 1907 TULSA
New York Offices
Oilfield Equipment Co., 30 Church Street, New York, N. Y.
DALLAS, TEXAS WICHITA, KANSAS CASPER, WYO.
SHREVEPORT, LA. HOUSTON, TEXAS
Stocks in All Principal Fields

An Engineering Achievement In Pipe Protection

THE

Emsco

Free-Circulation

PROTECTOR

Due to the method of locking, the Emsco Protector obtains a grip that eliminates all possibility of slipping, turning, piling or overlapping. Note large circulation space.

1.—performs every function required of a protector, with higher efficiency and longer life than previously has been possible.

2.—overcomes every serious disadvantage or difficulty heretofore resulting from the use of drill pipe protectors.

3.—and yet offers additional advantages, exclusively Emsco, which are possible only in a protector of this design and construction.

Although announced publicly now for the first time, the Emsco Free-Circulation Protector is not new. It has been in service in a large number of wells over a period of many months. It has been severely tried and every claim made for it has been proved in actual service over and over again.

Get This Data Now!

Our descriptive circular gives complete information regarding the design, construction, performance and advantages of the Emsco Free-Circulation Protector. Just write your name and address below, tear this out and mail to us, and we will send you this complete data immediately.

Entirely new . . . . entirely different . . . and so much better that there is no comparison

EMSCO PROTECTORS

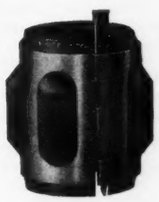
—do not restrict circulation. The circulation space provided is greater than the volume of fluid forced through the rotary hose.

—obtain a tighter, firmer grip and cannot slip up or down or around the pipe—they cannot pile or overlap.

—last from four to ten times longer under the same service conditions.

—withstand more abuse. Both the rubber body and offsets, or "bumpers", are cured flat under 200 tons pressure and embody no destructive *expansion strains* when on the pipe.

—cannot snap off the pipe while in the hole or when coming out. The steel cage holds it firmly and protects it from injury from any cause.



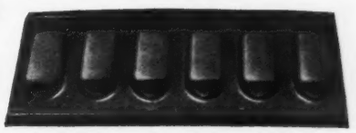
—can be installed in 35 seconds without the aid of intricate or heavy accessories of any kind.

—can easily be unlocked and taken off the pipe, however, when pulled out.

—are lighter in weight, making them easier to handle and adding less weight to the string—yet they are much stronger and more durable in every way.

—insure a dry job—the free circulation space prevents pulling the fluid out of the hole when coming out.

—stack better in the rig, require less space, and are easier to handle. Will not roll, can be stacked on ends or sides, quicker and easier, and they stay put.



There never has been a protector like this. Even if you have tried them all you must use the Emsco to get 100% performance, service and results. Write us now for complete information.

E. M. SMITH COMPANY

637 So. Clarence St. Los Angeles, California

EQUIPMENT AND SUPPLIES

CONTINENTAL AIR LIFT PUMP TO BE MARKETED

The Continental Equipment Co., Subway Terminal Building, Los Angeles, Calif., has been formed to market and service the Continental Air Lift pump and a new slush-pump piston. The pump introduces principles in lifting described as radically different. L. E. McCune, identified with the petroleum industry for many years and well known in the Mid-Continent and California fields, is president of the new organization.

The Continental Turbine Air Lift pump is the invention of Ralph H. Tucker, who has had 32 years of experience in the jetting and pumping of oil wells. Tests in difficult and deep California oil wells are being completed and the preliminary results are extremely interesting, according to Mr. McCune. The pump employs no sucker rods and requires a minimum amount of air or gas pressure. A simple motor arrangement within the pump, actuated by the pressure applied from the surface, causes the hydrostatic load of the oil column to be lightened.

L. E. McCune

Arrangements are to be made for the distribution of the pump through well-known supply companies in various fields.

The Continental piston is one of the simplest of slush pump attachments. Announcement of the result of tests made of both the piston and the pump are to be made in the near future.

NEW "TRADE STANDARDS" OUT

The fourth edition of the Trade Standards of the Compressed Air Society has just been published, and copies may be had upon application to C. H. Rohrbach, secretary, 90 West Street, New York. New material in the pamphlet, for which a charge of 50 cents is made, comprises a new formula for use in air-compressor testing, this being accurate for higher water columns than that previously used, thereby extending the capacity of a nozzle of a given size through a greater useful range; further suggestions in connection with the installation and operation of air compressors; caution against the use of old boilers or tanks as air receivers; suggestion for handling very cold "cooling water" so as to prevent condensation and undue wear on the air cylinders; and another illustration of an air-cleaning device.

BUSINESS NOTES

Upon completion of 25 years of executive and sales development work for the Waterbury Co., manufacturers of cordage, and until recently of wire rope, R. G. Richmond has resigned as general manager.

Armand V. Cox, formerly associated with Hugh Sturn Drilling Co. of Ardmore, Okla., has been made manager of the new Oklahoma City store of the Baash-Ross Tool Co.

W. Earle Pashley, advertising manager of the C. F. Pease Co., Chicago, has been appointed assistant sales manager and second vice president. Mr. Pashley also was elected to the board of directors. In addition to new responsibilities he will continue in charge of advertising and promotional activities.

The Linde Air Products Co. and associated companies will occupy Booth No. 281 at the Oil Equipment and Engineering Exposition to be held in the Shrine Auditorium, Los Angeles, Calif., on March 16 to 23 inclusive.

The Pyle-National Co., Chicago, has appointed Clyde V. Root to its sales engineering staff. Mr. Root will be in charge of railroad and industrial floodlighting.

Williams Brothers, Inc., pipe line contractors, Tulsa, have moved their general office to the Exchange National Bank Building.

J. G. Benedict, general manager of the Landis Machine Co., Waynesboro, Pa., and C. N. Kirkpatrick, general sales manager, have sailed to spend two months in England and on the continent, gaining first-hand information concerning European conditions.

The A. E. Moeller Co., Brooklyn, N. Y., has been succeeded by the Moeller Instrument Co., Inc. The ownership and management will remain as formerly, with Charles E. Moeller as president and general manager and Max E. Moeller vice president and head of the research department.

A two-reel motion picture telling the story of monel metal has been released. It shows the preparation of the metal in its various commercial forms in Huntington, W. Va., and traces its various uses in more than a score of industries.

POWER FACTOR PROBLEMS

The General Electric Co. announces a new system of solving power factor problems. This is a graphic method involving simple computations only, and is described fully in a new publication, GET-191, entitled "Solving Power Factor Problems by Scale." Heretofore the calculations relating to power factor and its improvement have been difficult for those most vitally interested, and at best did not visualize the conditions that might result from different treatments. The new system consists of laying down to scale the known factors and then scaling the unknowns. Many problems are illustrated in the booklet, as well as several solutions for one problem, so that there should be no difficulty in applying the simple rules. Thus the effects and probabe costs of improving power factor by unity-power factor synchronous motors, by capacitors or by synchronous condensers may be scanned and compared. Increased load-carrying capacity is readily measured and rearrangements suggest themselves.

PONCA CITY COMPANIES ELECT THEIR OFFICERS

The Ponca Specialty Manufacturing Co. and the Ponca Patent Development Co. recently held their first annual meeting in Ponca City, Okla., and elected officers as follows:

Ponca Specialty Manufacturing Co.—president, L. J. Mildren, formerly superintendent of drilling operations for Marland Oil Co.; vice presidents, A. R. Peters, formerly of the Marland Refining Co. production department, and H. C. Mulroy, formerly vice president Marland Refining Co., in charge of traffic and transportation; secretary-treasurer, James H. Hyde, Ponca City; directors, Mr. Mildren; C. C. Brown, president E. W. Marland, Inc., and formerly vice president Marland Oil Co., in charge of production; L. M. Robinson, manufacturer Robinson packer; H. L. McCracken, attorney, formerly connected with the Marland Refining Co.; Mr. Mulroy; Mr. Peters, and R. H. Young, Winfield, Kans., drilling contractor.

Ponca Patent Development Co.—president, Mr. Mildren; vice president, Mr. Peters; secretary-treasurer, Mr. Hyde; directors, Mr. Mildren, Mr. Mulroy, Mr. Brown, Mr. McCracken and Mr. Peters.

The Ponca Patent Development Co., capitalized at $500,000, holds the rights by assignment under patents on certain oil-field specialties. Manufacturing and sales contracts will be made with the Ponca Specialty Manufacturing Co. and other concerns on a royalty basis. Among the articles to be manufactured are a working barrel or pump for oil wells and a bomb for shooting wells.

The pump has been in process of development for several years. Instead of keeping the plunger or traveling valve expanded to fit tightly against the wall of the barrel to prevent leakage of fluid past the plunger, the wall of the barrel contracts around the plunger, maintaining a tight fit around the plunger and prevents entirely leakage of fluid past the plunger. The bomb has a safety feature to prevent premature explosion.

The Ponca Specialty Manufacturing Co., capitalized at $250,000, is taking over the machinery and equipment and manufacturing business of L. M. Robinson Manufacturing Co., recently moved to Ponca City from Blackwell, Okla.

The Robinson company has been manufacturing oil well pumps, packers and other field specialties. Mr. Mulroy states the new company will have a shop completely equipped for heavy machine work of all kinds required in oil field operation and it is the intention to engage in that line of work in addition to manufacturing.

FOUR COMPANIES CONSOLIDATE

The P. H. & F. M. Roots Co., Connersville, Ind., original patentee and for 70 years manufacturer of rotary positive blowers, pumps and meters, has merged with other interests and is now under the control of the Stacey Engineering Co. of Columbus, Ohio. The new organization includes the P. H. & F. M. Roots Co.; the Connersville Blower Co., also of Connersville; Wilbraham-Green Blower Co. of Pottstown, Pa., and the Stacey Brothers Gas Construction Co. of Cincinnati, Ohio. Col. Carmi A. Thompson, of Cleveland, was elected president; Corwin Abbott, vice president and general manager; Fletcher S. Heath of Columbus, Ohio, vice president; and Erle G. Meeks, secretary and treasurer. Charles T. Gordon will continue as general superintendent. All the companies will maintain their separate organizations, and will continue to operate separately until the final plans of the merger can be consummated.

TRADE LITERATURE RECEIVED

The Edward Valve & Manufacturing Co., East Chicago, Ind., has prepared a folder devoted to Edward valves.

"Pump-Fax," published by Goulds Pumps, Inc., Seneca Falls, N. Y., is in fact a handbook of information on the characteristics, installations and operation of pumps. Its 64 pages treat such subjects as how to figure head, discharge, or power of a pump; operation of reciprocating, centrifugal and rotary pumps, etc.

The Westinghouse Electric & Manufacturing Co. is sending out a leaflet describing the type RH motor and the drum-type starting switch. Each has passed all the tests of the United States Bureau of Mines for "explosion tested" (or "flame proof") equipment and may be used on "permissible" machines subject to the bureau's regulations.

The uses of hard facing to prevent rapid abrasion on drilling tools are covered in a 14-page catalog published by the Blackor Co., Los Angeles, Calif., and containing information helpful to operators with abrasion problems. The company also has published a booklet which describes and illustrates the proper methods of applying Blackor to various drilling tools.

SERVICE ARRANGED FOR WICO MAGNETO PATRONS

The Wico Electric Co., of Springfield, Mass., maker of the Wico magneto, is doing its part in reducing shutdown time at the pumping wells by providing service for its magnetos that should interest everyone who has anything to do with the oil industry and uses gas or gasoline engines.

Engine shutdowns mean loss of production, and while they may come from many causes, it is the purpose of the Wico Electric Co. to eliminate to as great an extent as possible all delays traceable direct to ignition troubles.

This company makes two models of magnetos, known as the "R" and "OC" types, for oil field engines and it is the company's claim that approximately 80 per cent of the engines now sold in the oil fields are so equipped.

Because of this volume of business it became necessary for the Wico Electric Co. to establish a factory branch in Tulsa some 8 years ago and this branch is located at 115 West Eighth Street. L. F. Smith is branch manager.

Six expert repair men are employed and the plant is equipped with special tools and gauges to facilitate the reconditioning of Wico magnetos, which can be handled at the rate of approximately 200 per week, and this service, including the use of genuine Wico spare parts, is rendered at a maximum charge of $6, which includes free coils and condensers.

The company also has appointed the following representatives, who are authorized to overhaul Wico magnetos and use only genuine spare parts: Wico Service Station, Howard Eason, manager, El Dorado, Ark.; Magneto Repair Co., 817 Louisiana Ave., Shreveport, La.; Generator Service Co., 1501 Commerce St., Fort Worth, Tex.; J. J. Gibson, 216 Canton Street, Dallas, Tex.; Oil Field Ignition Co., Ranger, Tex.; Beard & Stone, San Janito and Polk Streets, Houston, Tex.; and E. S. Cowie Electric Co., 1819 Wyandotte St., Kansas City, Mo. The last named company also maintains a branch store in Amarillo, Tex.

With more than 2,000 engines to serve

(Continued on Page 190)

A WESTCOTT CHRISTMAS TREE

Westcott Xmas Tree Fittings are made of the same high-grade Electric Steel used in Westcott Drilling and Line Gate Valves.

Tested to 3,000 pounds and 6,000 pounds pressure with kerosene oil, as are all Westcott Steel Valves... They are dependable.

"If Continental Sells It....There Is No Better"

THE CONTINENTAL SUPPLY COMPANY

General Offices: ST. LOUIS. *Export Offices:* 74 Trinity Court, New York
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THE CONTINENTAL SUPPLY COMPANY, LTD.
224 Traders Building, Calgary, Alberta, Canada

J 562

CONTINENTAL

Natural Gas Developments

TO RE-FORM NATURAL GAS FOR MANUFACTURE

In certain parts of the country where manufactured gas or mixed gas is distributed, large but insufficient quantities of natural gas are available, the United States Bureau of Mines points out. The amounts are sufficient to supply the demands for gas during off-peak periods but insufficient for peak-load demands. Because of the difference in burning characteristics, specific gravity and air requirements for complete combustion of the different gases, manufactured gas, made by ordinary processes, can not readily be used interchangeably with natural gas in ordinary household appliances. If the natural product can be changed—reformed—into a gas having a composition, density and other properties similar to manufactured gas, it can be used as a raw material for gas making without having a complicated gas-mixing problem. Furthermore, such a procedure would make possible the use of large volumes of natural gas during that portion of the year when the demand for it normally is small. Likewise, a satisfactory process for re-forming hydrocarbon gases in general would make possible the use of large amounts of still gases such as are produced and largely wasted in the refining of petroleum.

Years ago, when less natural gas was available than at present, it was common practice in Los Angeles and certain other municipalities in southern California to re-form natural gas in oil-gas generators. This gave a product having a calorific value of 550 to 650 B.t.u. per cubic foot, which, subsequently, prior to distribution, was enriched to 750 to 850 B.t.u. by the addition of natural gas. During that portion of the year when the supply of the latter gas was insufficient, the manufactured portion of the mixed gas (send-out gas) was made by cracking gas oil in the oil-gas generators—in other words, it was oil gas. No major change in the structure of the generating equipment was necessary to make it adaptable for re-forming natural gas. The results obtained were quite satisfactory and apparently this unique process served a useful purpose.

In other parts of the country the manufactured-gas plants are not equipped with oil-gas generators; therefore, this method of operating—making re-formed gas could not so readily be employed therein. However, most gas plants have equipment for generating carbureted water-gas or straight water-gas; the generators can be used, under certain conditions, in re-forming natural gas by a process which is also believed to be unique.

Tests were conducted by the United States Bureau of Mines at Toledo, Ohio, co-operating with the Ohio Fuel Gas Co., making re-formed gas in a large water gas generator, using natural gas and other hydrocarbons as raw materials. The results obtained in the joint tests showed that a re-formed gas can be made in a water-gas generator that is satisfactory for mixing with other gases, when it is enriched to a suitable degree (to standard calorific value) with natural gas. The enriched re-formed gas is also satisfactory as a substitute for certain gases commonly distributed as city gas.

The method of operation was different from that employed in California and the resulting gas had a different composition. It was made by introducing both steam and natural gas into the generator under controlled conditions, and at a predetermined rate; the proportion of each (steam and natural gas) used was controlled and varied to produce a definite result. A brief report of the results obtained is given in Bureau of Mines Report of Investigations No. 2,973.

COURT WILL NOT ORDER HIGHER RATE FOR GAS

CASPER, Wyo., Feb. 15. — The gas case at Shelby, Mont., has been decided in favor of the Ohio Oil Co. interests by a decision handed down by the Montana Supreme Court. This case caused much interest as it was an attempt on the part of the State to force a retail gas company to charge a higher rate for its gas.

The Great Northern Public Utilities Co. was serving Sheiby with gas; the Citizens Gas Co., made up of local capital, laid a line to Shelby in competition with the Great Northern and cut the existing rate. The Utilities, a subsidiary of the Ohio Oil Co., met the cut with a reduction below the Citizens company. The latter then cut again and the Utilities went the cut one better. The Citizens company then appealed through the courts to make the Ohio Oil Co. and the Great Northern Utilities Co. raise their prices to a point where the Citizens Gas Co. would be able to make a profit. The case was carried to the Supreme Court and the result was a decision in favor of the Ohio interests.

During the cold weather, the Ohio Oil Co.'s No. 1 Dry Creek, on the Dry Creek structure, was turned into the Billings gas line and the line shut in from the Wyoming fields. The Dry Creek well demonstrated that it was capable of holding the gas supply of the line at normal. No. 2, on the Dry Creek Dome, is drilling at 4,150 feet and should have the gas sand next month.

UNITED FUEL GAS CO. BUYS LARGE ACREAGE

WELCH, W. Va., Feb. 15.—The United Fuel Gas Co., one of the largest distributors of natural gas in the Middle West, has bought gas leases on several thousand acres in McDowell and Mingo Counties, West Virginia, and Buckhannon County, Virginia. It announced plans several months ago for running the line through southern West Virginia and Virginia and in asking for a franchise in Welch its representatives disclosed that the main line into Virginia would pass near Davy. Announcement has been made from the Charleston office that the company plans an expenditure of $1,800,000 this year in development of its property.

Practically all the leases are being closed for 10 years. The program, it is said, will include deepening existing wells and drilling 140 new ones. The company purposes to lease approximately 100,000 acres, much of it untested land.

GAS WASTE 42 PER CENT IN CALIFORNIA FIELD

Waste of natural gas in California during 1929 amounted to 42 per cent of production, C. C. Brown, gas administrator with the California State Railroad Commission, announced in San Francisco. Total production of 36 fields during the past year amounted to 558,000,000,000 feet.

Of the grand total produced, the State's figures indicate that 309,157,000,000 feet went to consumers, which means that 248,843,000,000 feet were wasted in one form or another.

Gas Administrator Brown reported that 65 per cent of the State's gas consumers are now being furnished with natural gas and that when the present projected gas lines have been completed more than 95 per cent of the State's gas consumers will be using natural gas. This will go a long way towards eliminating natural gas wastage.

PLAN TO TAX GAS USERS TO TEXAS LEGISLATURE

Users of natural gas, who have hitherto escaped direct taxation, are the objective of a tax plan which rumors from Austin indicate will be put before the legislature as soon as possible, says the Fort Worth Star-Telegram.

The plans of those behind this measure, according to information from the state capital, will reach every class of user from the domestic consumer to the drilling contractor who burns the gas from his well under his field boiler.

Unless the bill is carefully drawn there is a chance of such a tax being applicable to the same gas several times, according to fears of those observing the legislative effort.

Plans now contemplate a tax:

(a) On the producer who distributes.

(b) On purchaser (pipe line) which distributes.

(c) On purchaser from pipe line who distributes.

(d) On producer who uses (such producer using it for drilling or who burns it under refinery boiler.)

The amount of the tax is still undecided, but it is expected that it will be 1 cent per 1,000 cubic feet initially. This is the history of the gasoline tax, which started at 1 cent per gallon and is now 4 cents in this State, with some states charging 6 cents.

With Texas known as the natural gas state, supplied with heat for domestic heating and cooking and for industrial uses from Texarkana to El Paso and from Amarillo to Brownsville, such a tax will not only reach millions of gas users, but will yield a large amount, if only 1 cent per 1,000 cubic feet.

At last year's rate of consumption such a tax would yield nearly $2,250,000. The form proposed for the new tax is cited for its resemblance to the gasoline tax, which is ostensibly levied on the distributor, but which is passed along to the consumer in entirety.

Incidentally, it is pointed out that 1 cent per 1,000 cubic feet will be 25 per cent of the value of the gas at the wells in most cases.

CANADIAN WESTERN PROGRAM

CHATHAM, Ontario, Feb. 15. — Announcement has been made that the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary is planning this season to spend approximately $500,000 in extensions and replacements in connection with its system in southern Alberta. It is also planned to carry on further structure tests in southern Alberta with a view to locating new gas fields, and some commercial tests may be drilled. Special inspectors are now engaged in inspecting all services under winter conditions.

ELECTRIC EYE DETECTS GASES

An electric eye that detects dangerous gases has been installed in the Holland Tunnel under the Hudson River. Its warning is recorded in an office half a mile away, where a supervisor may turn a switch and speed up suction fans to end the danger. This is how the eye works: Warm exhaust gases from motor cars or impurities in the air cast a light shadow across a beam of light; a highly sensitive mechanical device detects the shade and, through an electric wire, moves a pencil on a paper record at the supervisor's desk.

OFFER FOR WASTE GAS

CHATHAM, Ontario, Feb. 15.—It is announced that the Bank of North Dakota has offered to purchase 50,000,000 feet a day of the Turner Valley waste gas at a rate of one-half cent per 1,000.

SEARCH FOR HELIUM IN WESTERN CANADA

CHATHAM, Ontario, Feb. 16.—C. J. Yorath, president and managing director of the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary has issued a statement dealing with the allegation of a "criminal waste" of helium in the Turner Valley Field. Mr. Yorath cites the statement of R. T. Elworthy of the federal department of mines that a thorough search for helium had been carried out by the mines department but it had not been found present in commercially extractable quantities in any gas in western Canada with the possible exception of that of the Bow Island Field. Gas in the latter contains about 0.3 per cent of helium, but the field is one of the oldest in Canada and is now practically exhausted. Gases in the Turner Valley and Coutts-Sweetgrass areas contain helium only in negligible quantity, that of the Turner Valley being only 0.1 cubic foot per 1,000 feet of gas; while gas from the deep horizon in Royalite's No. 4 contained only 0.009 per cent of helium. The major part of the gas wastage in the Turner Valley comes from this horizon and as a rule the helium content is even smaller than that from the Royalite well.

FLAME BURNS IN WATER IN NEW GAS BOILER

A gas flame which burns under water and so applies its heat directly to the production of steam is a recent addition to the industrial uses of gas, according to reports from England.

The gas burner mixes the gas with the proper amount of air to insure combustion under water, with the result that the hot gases, or products of combustion, are split up into minute bubbles, resulting in an immense area of contact between the gases and the fluid to be heated, and insuring a complete extraction of the heat from the flame. Extraordinary economy and efficiency are claimed for the new type of boiler, which has the further advantage of relatively small size, being materially smaller for any given quantity of steam production than an equivalent boiler heated with an outside flame.

The new gas-fired boiler system has been developed from the oxygen-gas flame used for cutting metal under water. In the latter case the flame makes a cavity in the water so that the flame can be applied directly to the metal to be cut.

LOWER GAS RATES

Lower gas rates for patrons of the Southern Counties Gas Co. are announced from San Francisco. The reduction, totaling about $200,000 became effective on all meter readings on or after February 10. Consumers in Santa Monica, Sawtelle, Venice and Ocean Park will profit most. Smaller reductions will be made in Santa Barbara, several communities in Ventura County, Laguna Beach and other sections. The rate decrease was ordered by the State Railroad Commission, and was not contested.

MISSISSIPPI RIVER FUEL

The Mississippi River Fuel Corp., operating company for the 526-mile pipe line built from the Louisiana gas fields by Standard Oil Co. of New Jersey, United Gas Co., Electric Bond & Share Co., and other interests, has closed commercial contracts aggregating 30,000,000 feet of natural gas daily, it is announced. The contracts are along the line with local plants of the Owens-Illinois Glass Co., Alpha Portland Cement Co., Granite City Steel Co., Aluminum Ore Co., and the Pittsburgh Plate Glass Co.

An Investment THAT PAYS 500%

UNDER severe competitive tests and in actual operation in the field, Blackor has proved its ability to resist abrasion from 3 to 5 times longer than the ordinary hard-facing or insert material.

Think what this means to your drilling costs!

It means less frequent pulling of the string to replace bits which means less wear and tear on the rig and less power consumed. It means less loss of drilling time and the greatest amount of footage before bit changes become necessary. In short, it means more hole...at less cost... and in less time.

Blackor is so hard that it can only be melted on with the electric arc! Instead of merely fluxing over the cutting surface of the tool, its molecules penetrate the steel and the crystals of steel penetrate the Blackor...making a perfect bond instead of merely being "stuck on" which often causes chipping or breaking off. Blackor does the work of both hard-facing and insert materials. By covering the entire surface of those parts of the bit where abrasion would ordinarily occur, it resists wear to the utmost and permits clean digging, faster digging and fewer changes of tools.

Put Blackor on your tools and note the difference.

Blackor is granular in form and is shipped in 5-lb. containers. Can be applied at the rate of 100 square inches per hour. An ounce covers from 4 to 6 square inches, one layer. Always uniform.

BLACKOR COMPANY

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Tulsa, Oklahoma Office:
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The Super Abrasion-Resistant Steel Facing

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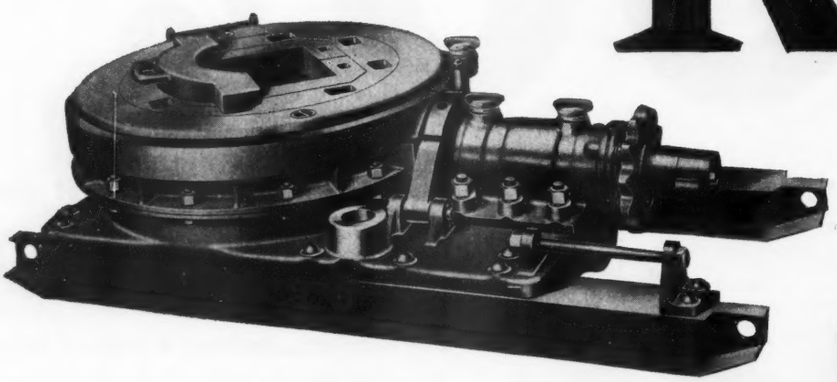

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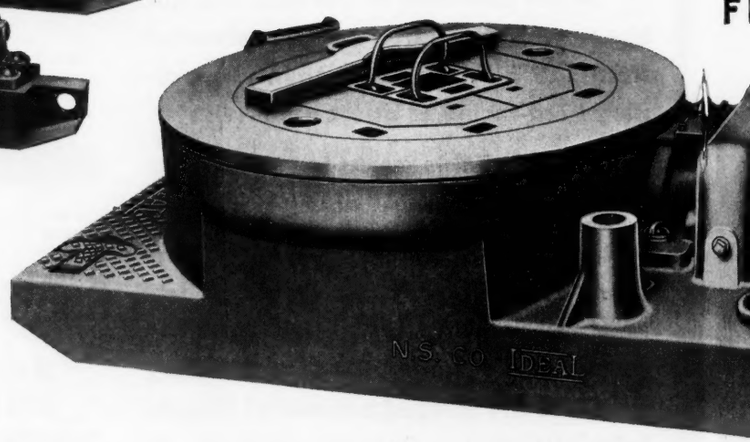

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No. 73 - No. 12-25½" ROTARY
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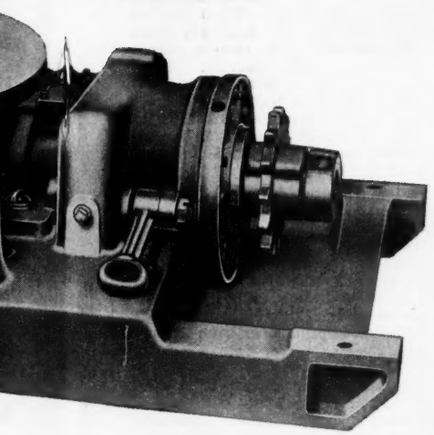

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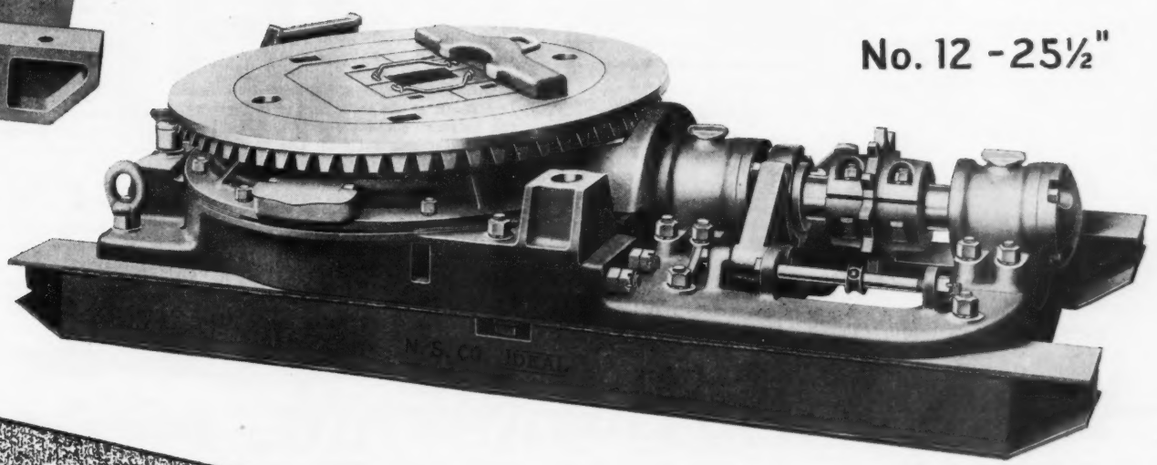


THE
AL SUPPLY
MPANIES

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry. Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Question should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

SEMINOLE AND GRAY COUNTY CRUDES

Would you kindly give me the properties of Seminole, Okla., and Gray County, Texas, crudes showing what products with percentages that are obtained from them? If you have it, would like to know the viscosities at several different temperatures.—W. M. F.

There is some variation in the crudes from both districts but the two analyses that are available show oils which are quite similar.

General Properties

	Seminole	Gray
Gravity, A.P.I.	39.0	42.3
B.s.	0.1%	0.05
Sulphur	0.358	0.265
Pourpoint	below zero	below zero
Color	greenish brown	dark green
Odor	sweet	sweet

Yield of Products

	Dry distillation per cent	Steam distillation per cent
Gasoline	38.1	41.5
	Gr. 58.6	Gr. 59.1
	End 425	End 420
Kerosene	7.5	6.8
	Gr. 40.8	Gr. 41.1
Gas oil	24.0	34.7
	Gr. 32.8	Gr. 33.4
Fuel oil	29.4	17.0
	Gr. 20.7	Gr. 21.1

The Saybolt Universal viscosities of pipe line oils from the same districts are at the temperatures indicated:

	100°F.	70°	50°	40°
Gray	43	53	70	88
Seminole	40	45	53	61

TESTING FOR HYDROGEN SULPHIDE

Kindly give me the method of procedure for determining the presence of hydrogen sulphide in refinery gases and gasoline.—J. C. H.

The characteristic odor of hydrogen sulphide is usually enough to show its presence but some gases, such as refinery gas, may contain other substances that will mask this odor. The usual qualitative test is made by a solution, 5 per cent, of lead acetate. A drop or two of this solution is dropped on a piece of filter paper which is placed in the gas and in the presence of hydrogen sulphide the moistened portion of the paper will gradually turn brown and finally black. The same test may be used when examining a liquid by suspending the paper above the liquid and then warming the liquid.

When it is desired to know the quantity another method should be used. Circular 2,847 of the Bureau of Mines describes a simple method which does not require the use of complicated and expensive apparatus. The title of this circular is "Prevention of Hydrogen Sulphide Poisoning in Handling and Refining High Sulphur Petroleums," by H. C. Fowler. The gas is collected in a dry bottle and by means of suitable connections and attachments direct titration is made with iodine in the presence of starch. The calculations are outlined:

Temperature 77° F. One c.c. 1/10 N iodine is equivalent to 0.0017038 gram hydrogen sulphide or 1.118 c.c. at 32° F. and 760 m.m. A 77° the volume is 1.22 and this is the factor. Assume the capacity of the bottle to be 1,000 c.c., the volume of the gas would be 1,000 c.c. The titration required 5 c.c. of the standard iodine solution, then:

Iodine c.c. × factor × 100 = per cent by volume.

$$\text{From this } \frac{5 \times 1.22 \times 100}{1{,}000} = 0.61 \text{ per cent hydrogen sulphide.}$$

Of course work of this character should be done by an experienced chemist.

CARBON DEPOSITS FROM PARAFFIN AND NAPHTHENIC OILS

Is it true that lubricating oils of the same carbon residue value regardless of type, paraffin or asphalt base, will deposit the same amount of carbon in a motor? Is there any difference in the character of such deposits?—W. S.

The discussion following, from Carbon Deposits from Lubricating Oils, by Livingston and Gruse, Ind. Eng. Chem., Vol. 21, page 904, is based on the study of three lubricating oils of similar physical characteristics when used in a fleet of motor coaches under service conditions for 180,000 car miles.

Properties of Oils Tested

Test—	High carbon paraffin oil	Low carbon paraffin oil	Naphthenic oil
Flash	480° F.	470° F.	500° F.
Fire	520	535	565
Vis. at 210° F.	105	104	103
Pour	25	10	20
Carbon residue	1.0	0.15	0.70

The consumption of the oil was about the same. The deposition of carbon per coach per 10,000 miles traveled was calculated. Average for six coaches are shown.

Comparative Figures on Obstruction of Each Port

Oil—	Total area of carbon sq. in.	Port area covered per cent	Area of carbon per coach sq. in.
High carbon paraffinic	30.64	59.0	35.7
Low carbon paraffinic	29.46	55.0	29.2
Naphthenic	11.57	22.5	11.8

The authors have pointed out the apparently general significance of the carbon residue test as an index of carbon-depositing tendency. They have suggested that the fundamental property involved is the volatility at flame temperature (as prevailing in the combustion chamber) of the oil, and that the carbon residue test owes its significance to its being a rough measure of such volatility. The construction of the ports in a sleeve-valve engine is such that the carbon deposited is subject to erosion by the exhaust gases. A soft fluffy carbon will not have much opportunity for accumulation. A heavy, sticky carbon, on the contrary will build up in a very short time.

Tests with the three oils in a laboratory poppet-valve engine indicated that the most adherent and densest carbon was deposited by the high carbon paraffinic oil; this oil required the most clean outs in the coaches. The low carbon paraffinic oil gave carbon deposits which were somewhat softer. The carbon from the naphthenic oil was definitely different from that of either of the two other oils, being soft and powdery. A distillation test confirmed the fact that an oil volatile at very high temperatures left a soft powdery carbon, while an oil nonvolatile at the same temperatures left an adherent carbon. The naphthenic oil distilled off 90 per cent between 580° and 664° F. The low carbon paraffinic oil gave 30 per cent between 614° and 698° F. when it cracked. The high carbon paraffinic oil gave 30 per cent off between 544° and 698° F., the cracking temperature.

Another factor in engine deposits, which is not reflected in the carbon residue test, is the character of the coke formed on cracking. A dry powdery form, free of binder, is desirable, since mechanical influence inside the engine can easily remove it. Such loose deposits seem also to be an inherent characteristic of naphthenic oils.

ICHTHYOL SOLUBLE IN WATER

When ichthyol is present in an oil well that also makes water, would the ichthyol be found in the oil or in the water? I would appreciate a reference where complete information on ichthyol can be obtained.—G. E. G.

Ichthyol is a manufactured product made from the distillate obtained from certain heavy oils and shales. The distillate is treated with sulphuric acid, then diluted with brine and the excess oil removed by solution in naphtha. The acidified oil is neutralized with ammonia. One result of the treatment is to increase the sulphur content four or five times that of the original oil. The final product looks like a heavy thick oil, almost black with a brownish tinge. Unlike ordinary heavy oil it is soluble in water.

Crude ichthyol has a gravity of about 32 A.P.I. and boils between 212° and 490° F. When distilled the fractions have an odor similar to petroleum together with a strong sulphur odor with that of mercaptans. The simplest test for ichthyol is its solubility in water giving a brown color with fluorescence. The vapors from distillation impart a violet color to concentrated sulphuric acid.

The preparation of ichthyol used for the treatment of burns and skin inflammations is sold under the name ammonium sulphoichtholate.

A description of ichthyol with properties and methods for testing may be found in Hydrocarbon Oils, by Holde-Mueller. The analysis following is from this source: "Elementary analyses gave the amount of carbon as ranging from 77.25 to 77.94; hydrogen 10.5 per cent, sulphur 10.7 and nitrogen 1.1 per cent. According to Schroeter the crude oil contains 2.5 per cent of sulphur. This becomes 10 per cent through sulphonation."

VAPOR PRESSURE OF GASOLINE BY REID METHOD

It is my understanding that there is to be a change in the method for determining the vapor tension of natural gasoline effective March 1 of this year and that it has been approved by the Interstate Commerce Commission. Please advise me if this is correct and where I can get full particulars in regard to this change?—H. W. S.

The determination of vapor pressure of gasoline has been under investigation for a number of years with the result that what is known as the Reid method has been suggested for a standard. Notice has been issued that this method will become official for use under the Interstate Commerce regulations on March 1.

The method is a modification of the previously used bomb method with an improved bomb. The Reid bomb consists of two cylindrical sections or chambers. One chamber is 2 by 10 inches, called the air bomb, is connected by means of a one-half by 2-inch nipple to a second section or gasoline chamber, which is 2 by 2½ inches. A pressure gauge is attached.

The procedure includes purging of vapors from the air chamber by filling and rinsing with water. A modified bomb is used when drawing samples from systems under pressure. The sample is drawn from cars and tanks by immersing the bomb in the liquid. When pouring the sample for test, both bomb and liquid must be cold enough to prevent change of composition while pouring. These temperatures shall be 32 to 40° for pressures of 9 pounds or less; 15 to 20° for pressures 9 to 12 pounds; 10 to 15° for pressures 12 to 16 pounds. All pressures being pounds per square inch absolute at 90° F.

The temperature of the air chamber shall be taken just previous to attaching it to the liquid chamber. After taking this temperature, the air chamber with the gauge in place shall then be attached to the gasoline bomb, using shellac or other suitable sealing material on the threads to make a tight connection. The bomb is turned upside down several times to allow gasoline to run into air chamber. It is then immersed in the water bath held at 100° F., within one-half degree. After five minutes the bomb is withdrawn, inverted, shaken vigorously, and replaced in the bath. This operation is repeated at intervals of two minutes until the gauge becomes constant with the bomb in the bath. If any leaks are detected the test shall be discarded.

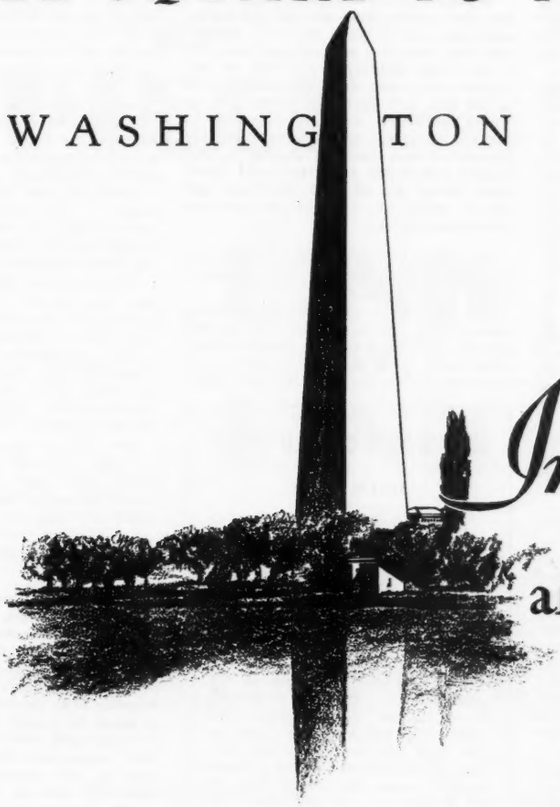
The calculation of the vapor pressure of the sample requires a correction for the change in the air pressure chamber. These corrections are supplied in a table based on the formula

$$\text{Total corr.} = \frac{(14.4 - \text{V.P. water at t})\ (t - 100)}{460 + t} - (\text{V.P. water at } 100 - \text{V.P. water at t})$$

To calculate the vapor pressure of the sample, the figure opposite the air bomb temperature is subtracted from or added to the observed pressure reading. Thus if the air bomb temperature is 80° F. and the observed gauge reading 24.5 pounds, the vapor pressure of the sample is 24.5—1.0=23.5 pounds per square inch absolute.

Complete details may be obtained from the Bureau of Explosives, Interstate Commerce Commission, Washington, D. C.

BE SQUARE TO YOUR MOTOR



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Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

CABLE OR ROTARY, WHICH?

I am interested in the advantages pro and con of the rotary type as against the regular type of drill, anticipating a depth of 4,000 feet. After a careful perusal of one of your issues I have written to two of the large equipment houses for information. Can you assist in securing any other information? Thank you for any assistance that may be forthcoming.—W. J. O.

Without knowing the territory in which you contemplate drilling, this department can answer your question in a general way only. The two methods of drilling commonly used are cable tool and rotary and each has special advantages for certain types of work. In some fields both types of outfit are used in the same wells.

In general, it has been found that cable-tool drilling is most satisfactory for wells in a territory that has not been explored previously. This is because with cable tools the operator can keep a better record of the formations passed through and test such favorable showings as they may have without the use of special equipment.

The rotary method, on the other hand, has proven much quicker in proven territory and it also saves casing for by mudding the hole as drilled it becomes unnecessary to run special strings of casing to shut off water or gas sands. After the rotary hole has been drilled to the top of the pay formation in many fields it is necessary to drill in with the cable tools, for the use of rotary to complete the well causes trouble, since the rotary mud will flow into and seal the producing formations and in this way prevent the well from making as much oil or gas as it would under cable-tool completion conditions.

The choice of either method will depend therefore largely upon the territory to be drilled and the decision will also be influenced largely by the type of drilling equipment available in the district. The wells are drilled by contractors who own the drilling equipment and it is usually best to get their advice, for their experience in any territory is of much more value than any generalized statement obtained from other sources.

For a general knowledge of drilling problems it is suggested that you get from Walter H. Jeffery, 1620 Second National Bank Building, Toledo, Ohio, a copy of his book, "Deep Well Drilling," in which Mr. Jeffery has compiled data dealing with the problems of drilling oil and gas wells. There are other books on this subject, but most of them are written in a more technical style than the one referred to.

TESTING WATER SHUT-OFF

I have been having trouble with a well where I made, or thought I had made, a water shut-off, but there is a leak. I do not know at what point. If I had tested the shut-off before drilling in the well I probably would have avoided a lot of trouble. What is the best and simplest way of testing a shut-off, please? I mean to make tests hereafter before completing a well.—N. E. I.

The effectiveness of a water shut-off always should be tested before drilling in. A leak around the shoe or in the casing may not be detected otherwise. Repair of such a leak is a simple matter before drilling into the oil sand, but it may be a source of serious damage if the repair is not made at that time. Common methods of testing water shut-offs are described by T. E. Swigart and C. E. Beecher in their "Manual for Oil and Gas Operations." Two tests are made, one for casing leaks and one for leaks around the shoe.

For the first part of the test, the hole should be bailed dry or bailed down to a certain level, and the well allowed to stand 12 hours or more. Then if bailing shows that water has entered the hole since the previous bailing, the casing probably leaks. The difference in fluid levels will indicate the amount and rate at which it is leaking. A casing leak should be repaired before the well is drilled deeper. If there is a large leak that cannot be repaired, it may be necessary to drill out the plug, set a smaller string of casing below the shoe of the original string, and make a second shut-off.

If a formation shut-off has been made, the hole should always be bailed dry. If water rises in the casing after 12 hours or more, it may enter either through a casing leak or around the shoe. The casing can be tested and the depth to the leak determined by the use of a casing tester. If the leak is not in the casing it is around the shoe, and a new seat must be provided or the pipe cemented.

In the second part of the test for water shut-off the effectiveness of the shut-off at the shoe is determined. If the well is cemented, the cement should be drilled out of the casing and drilling continued until the formation is touched. If the pressure of fluid outside the pipe is heavy an operator, before drilling out a cement plug, should run enough fluid into the hole to equalize the pressure from outside and thus provide against the pipe collapsing near the shoe, where the tools work. After the cement plug is drilled through the hole should again be bailed dry or bailed down to a certain level, allowed to stand 12 hours, and bailed again to determine whether or not water has entered. If the shut-off at the shoe is not tight, the well should be repaired before it is drilled deeper. A similar test should always be made of a formation shut-off after the hole is drilled a few feet below the shoe.

LIFE OF GAS FIELD

We are desirous of ascertaining if there are data obtainable on the minimum, maximum and average life of a natural gas field and of a natural gas well. If a gas field embracing an area of say 30,000 acres had only one well in it, would this well drain the entire pool or would additional wells be necessary to procure all of the gas? I am under the impression that there are records on this subject and would appreciate very much your giving me all that you have and also I would like to have you give me references.—N. L.

In his book "Measurement, Compression and Transmission of Natural Gas," Lester Clyde Lichty says:

"On account of the peculiar conditions surrounding the production of natural gas, the life of gas wells is problematical. Some wells with high initial rock pressure may decline very rapidly, and others with lower initial rock pressure may decline very slowly, while in some fields, water encroachment may cause very rapid declines. Conditions vary from field to field, so that the decline in one field cannot be used as a guide in determining the life of another field."

This book published by John Wiley & Sons, Inc., New York, might give you a good insight to many problems that enter into natural gas production and handling. You may be able to get additional data from the United States Bureau of Mines, Washington, D. C.

This department is unable to procure an answer to your question and it is suggested that if the information is of importance you obtain the services of a consulting geologist acquainted with gas field practice and ask him to make a report for you upon the particular field in question. He then perhaps could answer your question about the location of wells and the probable drainage area for each well and the other general details of producing a field to gain its greatest economical value to the owners.

WHY WAS IT CALLED THAT?

BULK BOAT

Among primitive practices was that of transporting crude petroleum down Oil Creek to the Allegheny River in an open flat boat, called a bulk boat because it carried the oil in bulk, untrammeled by barrel, can or other container. First the oil ran from the well in a rough V-shaped board trough to a crude tank, a hole in the ground 8 or 10 feet deep and 8 to 12 feet in diameter, lined with pine planks. The top of the tank was even with the surface of the ground. When a "pond freshet" came the oil, or such of it as had not escaped from the home-made tank, was pumped through a wooden pipe to the bulk boat and started on its way.

USE OF BARITE

We have recently acquired option on very good deposits of barite. We are interested in the use it may have in "cementing sludge" for shutting out water in oil wells. Any information you can furnish in regard to the use of barite will be greatly appreciated.—M. L.

Much has been written on the use of admixtures for increasing the weight of the mud employed in rotary drilling, but nothing of which this department has knowledge deals with barite alone. It should be mentioned in this connection that a patent of broad application (No. 1,575,945), issued March 9, 1926, covering the use of various substances for increasing the weight of rotary mud has been granted the National Pigments & Chemical Co., St. Louis, Mo.

Barite must be ground to pass through a minus 200 mesh to make it available for use in mud-laden fluids. The specific gravity of barite is 4.3 to 4.7. A specially prepared form of barite is widely used under a trade name. This product is said to remain in suspension in water for a long time in addition to adding weight and other desirable qualities to the mud.

It is suggested that you first investigate the patent situation relating to barite and then make a selling arrangement with a responsible agent who has a sales organization established. In the Oklahoma City Field at this time they are using about 15 different kinds of weight-adding admixtures, consisting chiefly of plastic clays.

The Oil and Gas Journal of February 3, 1927, contains an article, "Use of Heavy Minerals in Rotary Drilling Mud in the Ventura Field," by C. C. Thomas, which you may find of interest.

MAKING COLORED CONCRETE

In planning concrete walks to the houses of workmen which we are building here it has occurred to us that they would look more attractive if we made them of various colors, say brown or blue or green. Where we know the concrete is going to be daubed with oil and grease it might be a good plan to make it black to begin with and in that way avoid the dirty appearance that the grease would give it. We probably could make the black all right by putting carbon black in the concrete mixer. Can you tell us how to make the other colors and also how much of the coloring matter should be put in the mixture?—E. G. N.

Various pigments may be added to the cement to produce colored concrete. Iron oxide pigment will give you brown. Ultramarine blue will give you blue. Chromium oxide will give you green. You are advised against using carbon black to produce black, for tests made by the research laboratory of the Portland Cement Association have shown that 2 per cent of carbon black reduces the strength of the concrete 15 per cent. You can get just as dark color by using iron oxide black, and no harm will be done. In using any of the pigments they should not comprise more than 10 per cent of the cement (by weight).

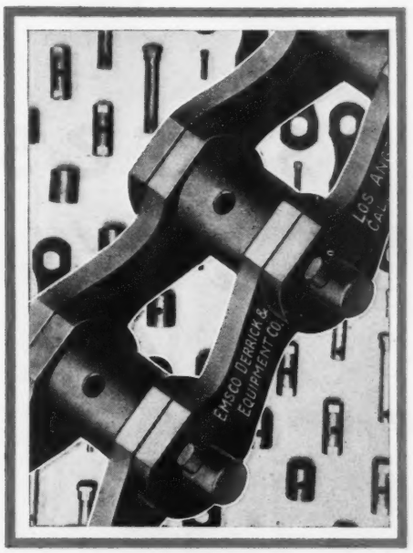
As only the mortar in your concrete mixture will be colored by the pigment and as abrasion in time will wear off the thin covering of mortar, the color of your walk will change unless you employ as a coarse aggregate some material of about the same shade as your colored concrete.

Experiments in making colored concrete indicate that the color is distributed more evenly and rapidly if it is mixed with the cement before it is put in the mixer. This method is expensive, however, if large amounts of concrete are involved, and it is a common practice to put the pigment in the mixer skip with the aggregate and the mixing time is lengthened until batches are colored evenly.

The proportion of the pigment to the cement used is the most important factor in determining the color shade of the mortar. The time devoted to mixing is important also. The greater the time given to mixing, the more evenly the color will be distributed.

PIECE BY PIECE

LINK BY LINK



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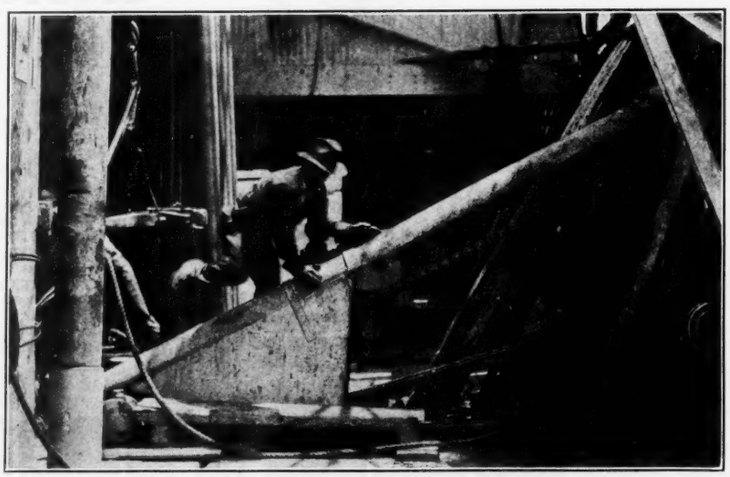

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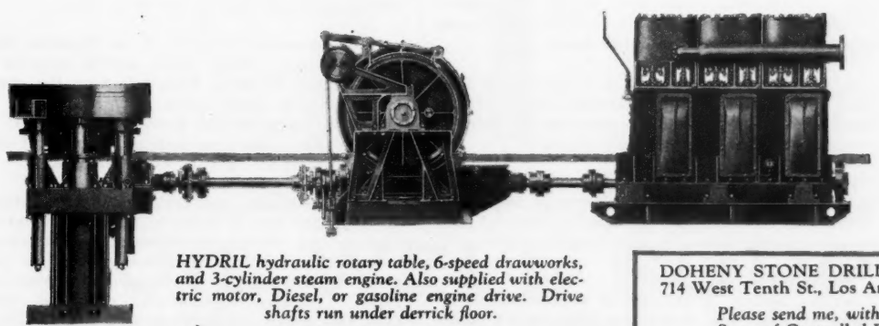

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MEN KNOWN IN OILDOM

E. E. Stone

E. E. Stone, formerly chief accountant of the Pan American Petroleum Company, a subsidiary of the Richfield Oil Company of California, and recently transferred to the Richfield Oil Corporation of New York as comptroller, made his start in the oil business 11 years ago as an office boy for the Ventura Refining Company in Los Angeles, Calif. He had just stepped out of a lieutenant's uniform and he was a university graduate, but he had no illusions concerning the commercial value of these things and he was not overparticular about where he started.

Mr. Stone was born in Marysville, Calif., July 25, 1896. He attended Hitchcock Military Academy and Boone's University School and graduated from the University of California, Berkeley, in 1917. In October of that year he was commissioned a second lieutenant of infantry and assigned to the Sixty-second Infantry in Fremont, Calif. Following his resignation in June, 1919, he got the job as office boy. He was transferred shortly afterward to the Ventura company's refinery in Fillmore, Calif., where he was employed in the testing laboratory. He left the oil business for a little while and then got a job with the Pan American Petroleum Company in 1920 assisting in taking physical inventories. He later became successively bookkeeper, cost accountant, statistician and manager of the accounting department and then chief accountant. While cost accountant, Mr. Stone was instrumental in the installation of the company's cost system and as statistician he revised the preparation of the company's financial statements.

While a student at the University of California, Mr. Stone became a member of the Sigma Alpha Epsilon college fraternity.

PERSONAL PARAGRAPHS

A. S. Gill, independent operator of Abilene, Tex., is in Fort Worth, Tex., on business.

* * *

Ralph Lape, auditor for the Transcontinental Oil Company of Tulsa, is in Fort Worth, Tex., on business.

* * *

S. A. Bush, with Sinclair Oil & Gas Company, has been promoted to chief geologist, with headquarters in Tulsa.

* * *

Carl A. Scholle has been placed in charge of offices of the Ohio Injector Company, of Wadsworth, Ohio, which are being opened at Houston, Tex.

C. A. Yoakam, formerly chief geologist with Sinclair Oil & Gas Company, has resigned.

* * *

E. A. Satchell, general superintendent of the Lago Petroleum Corporation, has arrived in England.

* * *

J. H. Bovaird, of Bradford, Pa., of the Bovaird Supply Company and Bovaird & Company, is a Tulsa visitor.

* * *

J. W. Vandergrift, Lancaster, Pa., president of the Southern Pipe Line Company, was a Pittsburgh, Pa., visitor recently.

* * *

Col. J. H. Graham, president of the Indian Refining Company, will return to Lawrenceville, Ill., this week from a trip to eastern points.

* * *

Sir John Cadman, G.C.M.G., chairman of the Anglo-Persian Oil Company, Ltd., is to give a series of broadcast talks on "The Romance of Oil."

* * *

W. W. Sheldon is again in his office at Tulsa after some time spent on a business trip that took him to New York City and Southwest Texas.

* * *

F. J. Schafer, general manager of the Southern California Gas Company, has been elected a director of the Better America Federation of California.

* * *

Eddie Kayler and Miss Lola Bell Welty, both of the Texas retail sales division of the Transcontinental Oil Company, Fort Worth, Tex., were married last week.

* * *

W. J. A. Reuhl, of the engineering department of the Bataafsche Petroleum, at The Hague, Holland, a subsidiary of the Royal Dutch-Shell, was a recent visitor to California.

* * *

R. G. Stewart, president of the Pan American Petroleum & Transport Company, returned to the New York headquarters after a visit to southern properties of the company.

* * *

C. L. Suhr, president of the Pennzoil Company, Oil City, Pa., is now on an extended trip to California points. He does not expect to return to Oil City until the middle of April.

* * *

Harry O'Donnell, Rocky Mountain agent for the Cranfill-Reynolds interests, visited Casper, Wyo., for a few days following a trip through southern Montana and northern Wyoming.

* * *

L. C. Decius, a graduate of Stanford University and until recently chief geologist of the Associated Oil Company, has been appointed manager of the land department of that company.

* * *

N. W. Bass, for more than 10 years associated with the United States Geological Survey at Washington, has located in Wichita, Kans., as chief geologist for the Pure Oil Company

* * *

William R. Staples, of the Staples Drilling Company, is recovering from his operation for appendicitis in the Okmulgee, Okla., hospital and hopes to soon be at his regular duties again.

* * *

A. D. Klicker, superintendent of the Illinois Pipe Line Company's branch at Hamilton Dome, has returned to Wyoming after a vacation in Chicago, Detroit, Buffalo, and other eastern cities.

* * *

H. R. Hamilton, formerly of The Texas Company, is now associated with Irving Stewart and E. B. Milburn in oil brokerage business and general leasing with headquarters in Los Angeles, Calif.

* * *

Ernest Hartford, assistant secretary of the American Society of Mechanical Engineers, has returned to his New York City office for a short time, but expects to be in Tulsa again early in March when the Council of the Society will hold a meeting here.

* * *

R. A. Griffith, president of the Sinclair Oil & Gas Company, who has been ill all winter, is now making satisfactory progress toward recovery. Mr. Griffith spent a part of the winter in California fighting pneumonia but has been at his home in Tulsa for the past few weeks. He is able to leave his bed a part of each day.

James H. Boyd, Jr., has left the Research Laboratory of Applied Chemistry at the Massachusetts Institute of Technology and is now with the process division of the Atlantic Refining Company, Philadelphia, Pa.

* * *

Robert W. Phelps, for 12 years resident geologist of the Union Oil Company at Brea, Calif., and co-author with F. W. Lake of an oil handbook on petroleum engineering, has resigned effective March 1 to enter private practice.

* * *

H. H. Schwartz, chairman of the board of the Arro Oil & Refining Company, and treasurer of the Empire State Oil Company, has returned to his Casper, Wyo., offices from California where he has visited for the past month.

* * *

H. A. Brand, superintendent of operations for the Richfield Oil Company in the Long Beach, Huntington Beach and Potrero Fields of Los Angeles Basin, has resigned and the position has been filled with the appointment of C. O. Harper.

* * *

R. E. Donovan, in charge of the safety engineering department, and W. M. Roberts of the same department, the California Company, San Francisco, have been making a tour of the Texas oil fields, and visiting the company's division offices at Dallas, Tex.

* * *

W. H. Strang, deputy supervisor mineral leasing division United States Geological Survey, has been appointed acting supervisor in the Rocky Mountain region, to take the position held by Jack Steele who resigned to go to West Africa with the Sinclair interests.

* * *

W. H. Whaley, manager of the Oil City Map Company of Fort Worth, Tex., was in Tulsa the past week. Mr. Whaley started making maps of the Mid-Continent fields in 1903 while a resident of Bartlesville, Okla., and has been active in that line ever since.

* * *

N. J. Pluymert, Jr., of the Standard Transportation Company, shipping subsidiary of the Standard Oil Company of New York, and R. C. Tuttle of the Atlantic Refining Company's marine department, were elected members of the American Bureau of Shipping at its annual meeting.

* * *

E. E. Tyer, formerly manager of the Oil Well Supply Company branch at Shreveport, La., recently was transferred to Houston, Tex., as manager of the Gulf Coast division. R. H. Christie, also formerly with the Oil Well Supply Company at Houston, Tex., has returned as manager at Houston.

* * *

H. C. Blackwell has been elected a vice president of Columbia Gas & Electric Corporation. Mr. Blackwell is president of the Cincinnati Gas & Electric Company, the Union Gas & Electric Company and other subsidiaries of Columbia Gas & Electric Corporation, all of which positions he is retaining in addition to his new office.

* * *

L. V. Hopkins, manager of the Hopkins Equipment Company, Tulsa, spent several days in San Antonio and Houston, Tex., following the opening of branches in these cities. M. A. Allen has been placed in charge of the Houston office. C. C. Collins, of Tulsa, has been making a survey of pumping conditions in the Gulf Coast district.

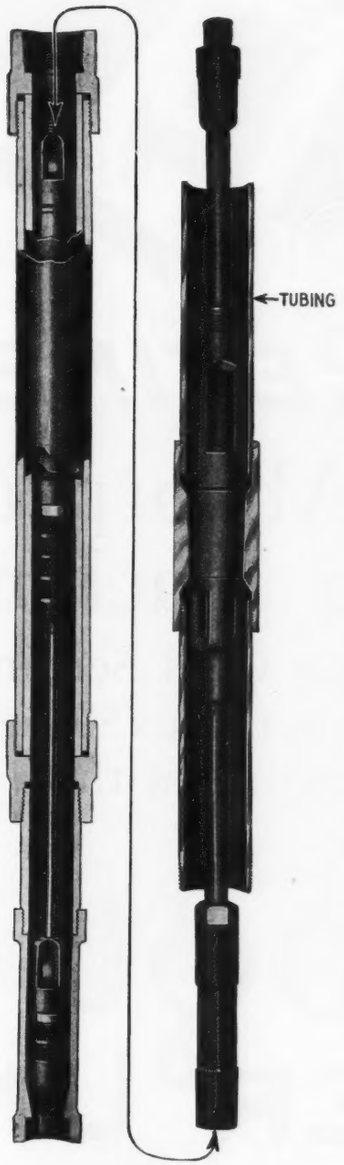
* * *

W. W. Freeman has resigned as vice president of Columbia Gas & Electric Corporation, also as director and official of various Columbia company subsidiaries, and has accepted election as chairman of the board of directors of Intercontinents Power Company, owning and operating electric light and power companies in Argentine, Chile and Brazil.

* * *

Lord Melchett, chairman of the board of directors of Imperial Chemical Industries, Ltd., with headquarters in London, is reported on a visit to South Africa to investigate the possibilities of gasoline and oil production from low-grade South African coal. The DeBeers Company is expected to cooperate with Imperial Chemical Industries, Ltd., in development of the coal distillation industry in South Africa.

Designed to meet severe conditions



"Oilwell" Imperial Plunger Pumps

For more than 20 years "Oilwell" Imperial Plunger Pumps have given satisfactory performance in all fields. Each pump has only two alloy cast iron liners which can be easily replaced on the derrick floor without special tools. The plungers are corrugated, affording a fluid seal which prevents slippage.

Assembled in nine different styles to meet all pumping requirements, in lengths 5-feet 6-inches to 14-feet inclusive. Can be used with 2, 2½, 3 and 4-inch tubing.

LINER BARRELS

"Oilwell" Liner Barrels are ideal pumps for wells of settled production. The Tulsa Style pump is seated by means of three composition rubber seat rings at top of pump. Floating drop in top cage prevents sand from settling back and relieves traveling valve ball from fluid pound. The pump is pulled as a unit. The Bremen style pump is seated on top of working barrel and recommended for wire line pumping. Valves, balls, seats and cups on both style pumps are standard size.

LOAD & SAND CHECK

The "Oilwell" Sand and Load Check, used with Imperial Plunger Pumps, will eliminate your sand troubles on full or part time wells. It relieves the pump of the load, reducing wear on the ball and seat.

WORKING BARRELS

Working Barrels made of either high grade drawn seamless tubing or alloy cast iron. Noted for their "shot-gun" finishes, these barrels are air pressure tested—checked with limit gauges and made in accordance with A. P. I. specifications.

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OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

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Manufacturers of: Oil Refinery Equipment, Drop Forged Steel Valves and Fittings, Water Tube and Horizontal Return Tubular Boilers, Ice Making and Refrigerating Machinery.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 53)

R. O. Roy's No. 1-B Farmer, 660 ft. S, 660 ft. E, NE SW, Sec. 18-13-13 ... Derrick.
R. O. Roy's No. 1-E Farmer, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 5-13-13 ... Drlg. 2,350 ft.

FRANKLIN PARISH

Davis et als' No. 1 Moore, 600 ft. W, 200 ft. S, NE cor., Sec. 12-11-6 ... S.D. 1,430 ft.
Evansville Inv. Co.'s No. 1 W. B. Welch, 945 ft. E, 511 ft. N, SW cor., Sec. 2-14-8 ... Drlg. 2,300 ft.
Franklin O. & G. Co.'s No. 1 T. J. O'Brien, 300 ft. N, 300 ft. E, SW cor. NW, Sec. 17-15-9 ... Drlg. 630 ft.

MOREHOUSE PARISH

J. P. White's No. 1 Chess-Wymond, Sec. 32-19-6 ... Tested S.W. 3,025 ft; W.O.

NATCHITOCHES PARISH

S. D. McDaniel's No. 2 Clark & Morse, 800 ft. E, 350 ft. N, C, Sec. 23-5-6 ... Tested 1,000,000 ft. gas and S.W. 8 ft; S.D. for orders; T.D. 2,536 ft.
Nichols & Wilder's No. 1 Clark, 150 ft. W, 250 ft. N, SE cor., Sec. 10-10-8 ... Drlg. chalk 2,190 ft.
Robeline O. & G. Co.'s No. 1 Winn, 558 ft. N, 348 ft. E, SW cor. SE, Sec. 7-8-9 ... S.D. 1,600 ft.

OUACHITA PARISH

J. L. Bullock, trustee's No. 1 West Va. Lbr. Co., N½ NE, Sec. 25-18-5 ... S.D. on account of high wtr; T.D. 2,700 ft.

RAPIDES PARISH

Ayers Bros.' No. 1 Wickliff, 2,790 ft. N, 150 ft. E, SW cor., Sec. 9-5n-2e ... S.D. for fuel 2,650 ft.

RED RIVER PARISH

W. D. Ball's No. 1 Krumholtz, 660 ft. S, 660 ft. E, NW cor., Sec. 32-14-10 ... S.D. account high wtr. 1,550 ft.
LeGrande et als' No. 1 Sample, Sec. 11-14-11 ... Rigging up.

RICHLAND PARISH

Austin & McDonald's No. 1 Hunt, 594 ft. N, 660 ft. E, SW cor., Sec. 13-17-5 ... Derrick.
Austin & McDonald's No. 2 Millsaps, SW cor., Sec. 17-17-6 ... Waiting orders; T.D. 2,679 ft.
Austin & McDonald's No. 3 Millsaps, 1,980 ft. S, 660 ft. E, NW cor., Sec. 16-17-6 ... Tested S.W; W.O. 2,477 ft.
Austin & McDonald's No. 4 Millsaps, NW cor. Sec. 16-17-6. Location.
Austin & McDonald's No. 5 Millsaps, 2,640 ft. N, 1,320 ft. W, SE cor., Sec. 8-17-6 ... Derrick.
W. C. Feazel's No. 1 Landrum, 620 ft. N, 4,573 ft. E, SW cor., Sec. 6-16-7 ... Derrick.
Industrial Gas Co.'s No. 1 T. R. Hodge, 3,259 ft. E, 1,320 ft. S, C, Sec. 7-16-7 ... Fishing 3-in. drill stem; T.D. 2,874 ft.
Industrial Gas Co.'s No. 1 A. T. Davidson, 1,350 ft. S, 916 ft. E, NW cor., Sec. 6-16-7 ... S.D; W.O. 2,762 ft.
Industrial Gas Co.'s No. 1 Ruston Drlg. Co., 1,930 ft. S, 1,955 ft. E, NW cor., Sec. 7-16-7 ... S.D; W.O. 2,636 ft; igneous rock.
Richland O. & G. Co.'s No. 1 Singleterry, 1,930 ft. N, 660 ft. W, SE cor., Sec. 20-18-7 ... Cmtd. 9-in. csg. 970 ft.
Shreveport Contractors, Inc.'s No. 1 Buie, 600 ft. E, 400 ft. N, SW cor., Sec. 17-15-7 ... S.D; shale and boulders 2,527 ft.

SABINE PARISH

Bridges-Clark Oil Co.'s No. 1 Gay et al, 300 ft. S, 300 ft. E, NW cor. NE NW, Sec. 3-9-12 ... D.S. test 2,261 ft; S.W; drlg.
Bridges-Clark Oil Co.'s No. 1 McWilliams, 320 ft. S, 330 ft. E, NW cor., Sec. 30-10-11 ... Drlg. 1,200 ft.
G. M. LeGrand's No. 1 A. C. Haley, 1,020 ft. N, 3,300 ft. E, NW cor., Sec. 6-7-12 ... Cmtd. 6⅝-in. csg. 2,136 ft.
Paramount O. & G. Co.'s No. 1 Wootems, 330 ft. N, 330 ft. W, SE cor. NE NW, Sec. 11-6-12 ... Derrick.
D. H. Riddick's No. 1 Scretchfield, 400 ft. E, 400 ft. N, SW cor. NW SE, Sec. 18-9-12 ... S.D. 2,300 ft.
A. H. Tarver's No. 3 Long Bell, 800 ft. N, 800 ft. W, SE cor. SW, Sec. 18-8-13 ... Drlg. 2,150 ft.

TENSAS PARISH

A. R. Willis et als' No. 1 Curry, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ... S.D. 600 ft.

UNION PARISH

Bahan & Bahan's No. 1 J. West, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 33-23-2 ... Drlg. 2,060 ft.
Interstate Nat. Gas Co.'s No. 26 fee, 2,970 ft. S, 660 ft. E, NW cor., Sec. 33-23-3 ... Drlg. 2,090 ft.
Fred Stovall's No. 1 Stovall, 1,820 ft. E, 350 ft. N, SW cor., Sec. 32-23-4 ... Rig up.

WEBSTER PARISH

F. M. Fuller's No. 1 Monzingo, 200 ft. N, 200 ft. W, SE cor., Sec. 27-18-8 ... Began drlg. Nov. 10; cmtd. 10-in. at 62 ft.
Paul C. Warren et als' No. 1 Martin, 305 ft. N, 212 ft. E, SW cor., Sec. 20-20-9 ... S.G. top Nacatoch 1,759 ft; S.D. 1,912 ft.

WEST CARROLL PARISH

H. L. Hunt, Inc.'s No. 1 R. E. Brown, NW cor. NW SW, Sec. 4-21-11 ... Rig up.
Palmer Corp.'s No. 1-A Marston, 1,320 ft. S, 89 deg., 35 min. W, 1,320 ft. of SE cor., Sec. 11-19-10 ... Bailing 6⅝-in. csg; T.D. 2,390 ft.

ARKANSAS

ASHLEY COUNTY

Ark. Fuel Oil Co.'s No. 1 Crossett Lbr. Co., 330 ft. E, 330 ft. S, NW cor., Sec. 1-19-7 ... Fishing drill stem; T.D. 3,235 ft.

CLEBURN COUNTY

Cosden Oil Co. of Ark.'s No. 1 Donophan, 100 ft. S, 660 ft. E, NW cor. SW SE, Sec. 19-9-10 ... Drlg. shale and shell 1,500 ft.
Donnelly-Craver et als' No. 1 Doniphan Lbr. Co., SE cor. NW, Sec. 33-11-9 ... Began drlg. Dec. 30; S.D. 60 ft. account cold weather.

COLUMBIA COUNTY

Parker et als' No. 1 Franks, 330 ft. S, 330 ft. W, C, Sec. 25-19-22 ... S.D. 2,835 ft.
Williams et als' No. 1 Fullenwider, 200 ft. N, 600 ft. E, SW cor. NE SE, Sec. 12-17-22 ... Rigging up.

DREW COUNTY

McClintock & Goodka's No. 1 Ogles, 920 ft. W, 400 ft. S, NE cor., Sec. 35-13-5 ... S.D. repairing rig 1,810 ft.

FAULKNER COUNTY

Gold Creek O. & G. Co.'s No. 2 Stermer, SE cor. NW SE, Sec. 17-4-13 ... Began drlg. Dec. 12.

GARLAND COUNTY

Givens et als' No. 1 Garrett, 660 ft. S, 660 ft. W, C, Sec. 1-3-19 ... Drlg. gray sandy lime 3,402 ft.

GRANT COUNTY

Jones & Watkins' No. 1 Meek, Sec. 5-4-11 ... S.D. 1,400 ft.

LITTLE RIVER COUNTY

A. L. Buck's No. 1 Greason, NW NW, Sec. 25-12-32 ... Drlg. red shale 2,230 ft.
McDonald & Shaw's No. 1 W. E. Black, 240 ft. N, 450 ft. W, SE cor. SE NE, Sec. 12-13-28 ... S.D. 1,965 ft.

LOGAN COUNTY

M. W. Greeson's No. 1 C. S. Parke, 330 ft. N, 330 ft. W, SE cor., Sec. 21-8-24 ... Location.

MADISON COUNTY

Phillips Pet. Co. and F. S. Craver's No. 1, C, Sec. 11-14-28. Tested 250,000 ft. gas 63 ft; drlg. 1,461 ft.

OUACHITA COUNTY

Anderson & Wimmer's No. 1 Buck, Sec. 7-15-17 ... Arranging D.S. test 2,680-90 ft.
Artex Oil Co.'s No. 1 M. V. Smith, 330 ft. S, 330 ft. E, NW cor. SE NW, Sec. 31-15-17 ... S.W. 3,077 ft; drlg. 3,166 ft; T.A. 3,188 ft.
Copenhaven et als' No. 1 Warnick, Sec. 2-15-17 ... T.A. 2,190 ft.
Kobler & Erickson's No. 1 Rumph & Tyson, 300 ft. N, 300 ft. W, SE cor., Sec. 13-15-15 ... Set 10-in. at 98 ft.
C. H. McDonald's No. 1 Fogle, Sec. 13-14-16 ... S.D. 2,301 ft; W.O.
A. P. Smith et als' No. 1 Reynolds, C SW NW, Sec. 21-14-17 ... Cmtd. 6-in. 1,711 ft; T.D. 1,747 ft.

PIKE COUNTY

Theo. Davis, trustee's No. 1 Ruth Wilson, 200 ft. S, 200 ft. W, NE cor., Sec. 25-5-26 ... S.D; funds; T.D. 718 ft.

POPE COUNTY

Ark.-La. Pipe Line Co.'s No. 1 Harms, 622 ft. S, 628 ft. W, NE cor. NE NW, Sec. 22-9-21 ... Drlg. 1,825 ft.
Cosden Oil Co.'s No. 1 Mo. Pac. R.R., 660 ft. N, 660 ft. E, SW cor. NW SE, Sec. 13-9-19 ... Arranging to cmt. 12½-in. 2,500 ft.

PRAIRIE COUNTY

Transcontinental Oil Co.'s No. 1 Louis Novak, 330 ft. E, 330 ft. N, SW cor. SW NE, Sec. 36-2n-6 ... Drlg. 2,868 ft.

ST. FRANCIS COUNTY

Brownlee Drlg. Co.'s No. 1 Whitted, 110 ft. N, 110 ft. E, SW cor. SE NW, Sec. 28-4-1 ... S.D; funds; 300 ft.

UNION COUNTY

Al-Cal Oil Corp.'s No. 1 Harvey, 660 ft. W, 300 ft. S, NE cor. SW SE, Sec. 1-17-16 ... S.D; W.O. 2,234 ft.
Bredham et als' No. 1 Craig, SW cor. NW NE, Sec. 6-18-15 ... Drlg. 2,744 ft.
W. M. Coates, trustee's No. 1 McDuffie, Sec. 32-19-17 ... T.A. in red beds; T.D. 4,506 ft.
S. Y. Dorfman's No. 1 Simmons, 150 ft. N, 150 ft. E, NW SW, Sec. 13-16-15 ... Tested S.W. 2,061 ft; S.D; W.O. 2,081 ft.
O. W. Estes' No. 1 Felsenthal, 330 ft. S, 330 ft. W, NE cor. NE NW, Sec. 2-18-15 ... Pulled liner; S.D; W.O. 2,230 ft.
O. W. Estes' No. 1 Telford, 320 ft. S, 320 ft. E, NW cor. SW, Sec. 35-17-14 ... Swbng.; 1,800 ft. S.W. in hole; f. D. 2,230 ft.
Federal Pet. Co. and Union Saw Mill Co.'s No. 1 fee, 330 ft. N, 330 ft. W, SE cor. NW NE, Sec. 9-18-13... Derrick.
Lion Oil Ref. Co.'s No. 1 Ballard, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 10-18-13 ... Rig up; W.O.
Marine Oil Co.'s No. 1 Simmons, 200 ft. N, 200 ft. W, SE cor. SE NW, Sec. 10-18-13 ... Location.
Marine Oil Co.'s No. 2 Simmons, 300 ft. N, 300 ft. E, SW cor. SE NW, Sec. 10-18-13 ... Location.
Marine Oil Co.'s No. 2-B Winn, 200 ft. S, 200 ft. E, NW cor. NW SE, Sec. 10-18-13 ... Location.
Johnson-Gummer Co.'s No. 1 Cargile, Sec. 4-18-15 ... O.W.D.D; arranging to deepen; T.D. 3,341 ft; dry and abd. Oct. 2, 1929.
Stark et als' No. 1 Ainsworth, NE cor. NW NE NE, Sec. 8-19-13 ... Coring 2,115 ft.

VAN BUREN COUNTY

Glenn Cole et al, trustee's No. 1 Scanlan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13 ... S.D. 50 ft.

WASHINGTON COUNTY

Delbert & Graves' No. 1 Cunningham, Sec. 14-15-32 ... S.D. repairing pump; T.D. 650 ft.
O'Hara & Shetterly's No. 1 Boyd, SE cor. SE NE, Sec. 12-16-32 ... Spudded Sept., 1928; S.D. 140 ft; resumed drlg. Aug. 25; U.R.; T. D. 150 ft.
C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ... Trying to kill wtr. flow 2,150 ft; hard sand showing oil 1,637-40 ft.
Lincoln Leaseholding Synd.'s No. 1 Lincoln, Sec. 30-15-32 ... U.R. 8-in. to T.D. 1,500 ft.

WHITE COUNTY

Letona Synd.'s No. 1 Letona, SE cor. NW SW, Sec. 35-9-8. Cmtd. 5 3-16-in. 3,500 ft; drlg. 3,605 ft.

EAST TEXAS

CAMP COUNTY

Rogers et als' No 1 Enfelt, R. M. Montgomery Sur. ... Tested dry 1,870 ft; S.D. 1,930 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossier, E. Hughhart Sur. ... Drlg. 2,050 ft.
Shad Harper's No. 1 W. R. Garland, J. Wagley Sur. ... S.D. 1,862 ft.
Johnson Pet. Co.'s No. 2 Randolph, Edward Dean Sur. ... S.D. 2,000 ft.

SHELBY COUNTY

Benedum & Trees Oil Co.'s No. 1 McCann, D. G. Green Sur. ... Drlg. 2,045 ft.
Chapperall Oil Co.'s No. 2 Holt, Matthew Moore Sur. ... S.D. for orders 3,004 ft.

MISSISSIPPI

ALCORN COUNTY

Alcorn Pet. Co.'s No. 1 Matthews, SE cor. Sec. 14-2s-7e.. Arranging to shoot 2,520-60 ft; T. D. 2,735 ft.

CHICKASAW COUNTY

Hightower & Golson's No. 1 Flemming, NE cor. Sec. 20-13-3 ... Driving 8¼-in. through quicksand; T.D. 1,252 ft.

HINDS COUNTY

Oscar Brown's No. 1 Riverside (formerly Hennessee et als') SE cor. SE SW, Sec. 23-16-5 ... Set 12½-in. 30 ft; S.D. 1,050 ft.
Love et als' No. 1 Mayes, Sec. 2-5-1e ... Drlg. 6⅝-in. plug; T.D. 2,461 ft.
Mrs. Reeder et als' No. 1 State, SE cor. NW NW, Sec. 25-6-1e ... C.O.; T.D. 2,805 ft.

HUMPHREYS COUNTY

E. C. Steele et als' No. 1 C. B. Box, SE cor. SE NE, Sec. 25-14-4w ... Set 12½-in. 60 ft; S.D.

LAUDERDALE COUNTY

Lauderdale O. & G. Co.'s No. 1 Lackey, 990 ft. S and E, NW cor. NE, Sec. 2-7-16 ... Set 8¼-in. 2,792 ft; T.D. 2,816 ft; sand 2,809-14 ft.
Meridian O. & G. Co.'s No. 1 Hauser, Sec. 33-8-18 ... Arranging D.S. test 2,681-93 ft.
J. R. Smith Oil Co.'s No. 1 C. F. Craig, Sec. 2-6-14 ... Derrick.

LAFAYETTE COUNTY

Banks-Goode et als' No. 1 May, 113½ rods S, 26 rods E, NW cor. SW, Sec. 22-10-1w ... Derrick.

LINCOLN COUNTY

Lincoln O. & G. Co.'s No. 1 Pat Case, NE NE, Sec. 21-8-6. S.D; W.O. 2,221 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19 ... S.D. 2,912 ft; bailer lost in hole.
Amory Pet. Co.'s No. 1 Hall, Sec. 8-13-19 ... Set liner 2,323 ft; to stop caving; arranging test; gas show 2,387 ft; T.D. 3,045 ft.
Park Bowser et als' No. 1 Cowart, second hole, Sec. 2-12-19 ... Driving 12½-in. 30 ft.

RANKIN COUNTY

Gulf Ref. Co.'s No. 1 Rainey, NW NW, Sec. 13-5-1e ... Location.

WARREN COUNTY

El Dorado Oil Co.'s No. 1 Dornbush, Sec. 8-18-15 ... Waiting for 6-in. to set; over 2,350 ft. stuck; D.S.; T.D. 2,475 ft.

YALOBUSHA COUNTY

Carter Oil Co. and J. D. Collett's No. 1 Blackmur, 330 ft. S, 990 ft. W, C, Sec. 14-11-4 ... Drlg. Tuscaloosa gravel 2,427 ft.

YAZOO COUNTY

Amerada Pet. Corp.'s No. 1 Doherty, SW SW, Sec. 24-12-2 ... Coring 3,411 ft.

TENNESSEE

DECATUR COUNTY

Chester County Oil Co.'s No. 1 Montgomery ... Cmtd. 6-in. 1,040 ft; drlg. hard gray lime 1,165 ft.

ALABAMA

LAMAR COUNTY

Briggs & Knapp's No. 1 Wefel, Sec. 25-12-14 ... Drlg. hard lime 1,730 ft.

LAUDERDALE COUNTY

A. D. Morton et als' No. 10 O'Neal estate, Sec. 8-2s-13w.. Rigging up cable tools.

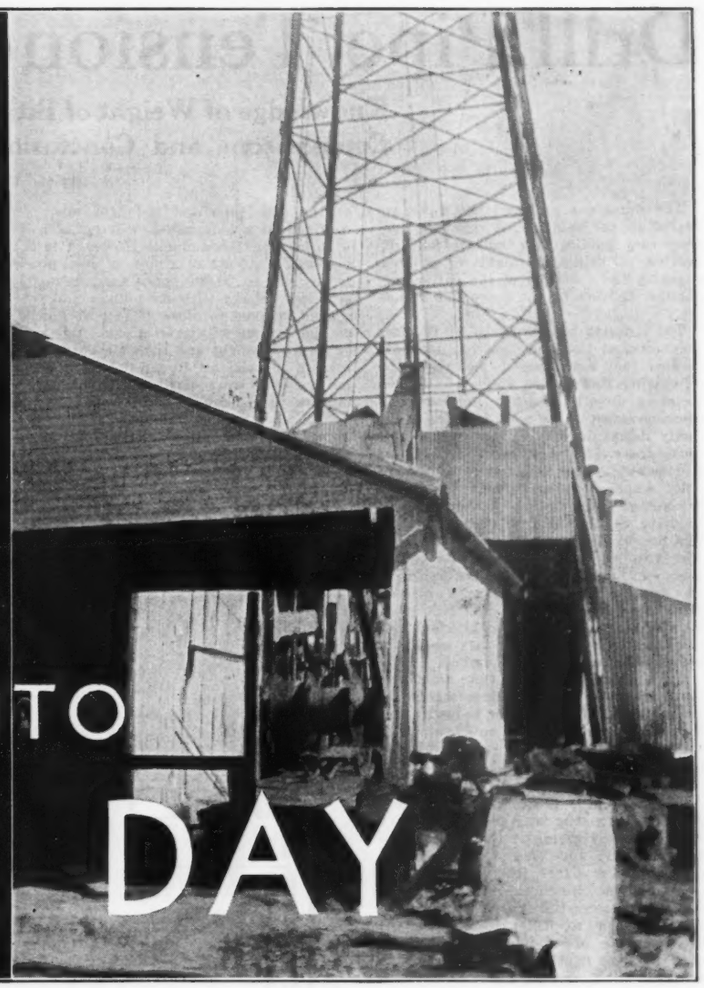
MARION COUNTY

Hobson et als' No. 1 John Clark, SE, Sec. 29-11-14 ... Derrick pattern.

WASHINGTON COUNTY

S. A. Hobson's No. 1 Hobson Bros., Sec. 9-8-2 ... S.D; S.W. flow at 1,450 ft.
S. A. Hobson's No. 1 Wilson, Sec. 27-7-1 ... Fishing bailer; T.D. 881 ft.

TURNING NIGHT INTO DAY

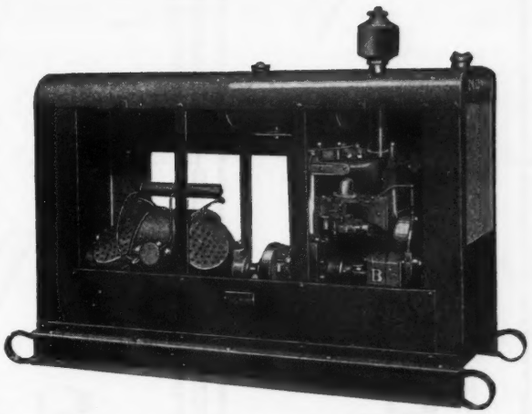


Drilling Rigs can be kept working as efficiently throughout the night as during the day.

For the Novo Flud-Lite Lighting Unit provides clear, unfailing, flickerless light all night long. And it is built with plenty of surplus power to operate grinders, blowers, 2½″ to 3″ pressure pumps and other auxiliary machinery.

Novo Flud-Lite Lighting Units are built especially for oil field work.

The standard Westinghouse Generator is powered with the famous Novo Rollr Engine—with Timken Roller Bearings on crank and drive shafts—a simple engineering answer to Novo's lower gas consumption and freedom from repairs and replacements.



One quarter turn, right hand, is all that's needed to start the Novo Flud-Lite Generator

Engine speed is automatically controlled to within 5% and voltage is held constant to within 3 volts. Flickering and burned out bulbs, common to ordinary lighting outfits, are eliminated.

And the complete unit is compactly arranged within a steel lock-up house —for ready portability.

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NOVO ENGINE COMPANY
240 Porter Street, Lansing, Michigan
CLARENCE E. BEMENT, Vice-Pres. and Gen. Mgr.

NOVO
Flud-Lite Lighting Units

Sold and Serviced by National Supply Company

Drill Pipe Tension and Straight Holes

Knowledge of Weight of Bit and Rate of Feed Necessary. Comparisons and Conclusions of Interest to Industry

By R. A. Silent*

The numerous articles that have appeared in the columns of this and contemporary publications indicate that the problem of drilling straight oil wells is engaging the attention of the entire production division of the petroleum industry.

The industry has awakened to the fact that crooked holes are costly, not only because they sometimes do not reach the oil-bearing formations which are known to exist directly beneath the point of commencement of the well, but due to the costly delays in drilling caused by their crookedness. Further, crooked holes are a constant source of expense and difficulty when pumping is required as the amount of wear and the power required to drive the sucker rods bear a distinct relation to the straightness of the hole. The cost of delays caused by crooked holes can be estimated when we find from the records that in a large California field one company alone had five wells redrilling at one time due to the fact that the holes were so crooked they could not be, economically, carried further.

It is the purpose of this article to make comparisons of matters which are probably well known to the industry, but the conclusions that may be drawn from them do not seem to have received the attention which the facts warrant.

Long Distance to Bit

The drill pipe goes a long way into the ground, a long way from the rotary table which is giving it its turning motion. The 6⅝-inch size of pipe is rarely carried below 5,000 feet, although the company with which the writer is associated has successfully carried this size of their product to 6,500 feet. For the 5$\frac{9}{16}$-inch size about 6,500 feet is more than average depth, although again the writer's company has been successful with the 5-inch size to 8,300 feet. The 4½-inch size has been carried to 7,500 feet without difficulty. Now consider relation of the diameter of these pipes to their lengths or what is generally called in treatises on mechanics the "slenderness ratio." This relation has a very definite effect on the supporting power of a column and those interested in the pure mathematics of this question are referred to the formulae derived by Euler or Rankine which are in daily use in structural design. However, these mathematical relations are not necessary for our study of the problem and consideration will be given only to a physical comparison of the ratios themselves. In the 6⅝-inch size of pipe the outside diameter of the pipe proper is 0.5521 feet. Consider a length of 5,000 feet, we find the pipe then to be 9,056 times as long as it is thick or its "slenderness ratio" is 9,056. Similarly, for 6,500 feet of 5$\frac{9}{16}$-inch pipe and 7,500 feet of 4½-inch pipe the "slenderness ratios" are found to be 14,023 and 20,000, respectively.

Consider a piece of common 14-gauge baling or "hay wire," well known to the industry, which we find to have a diameter of 0.08 of an inch. If we cut this wire into lengths that have the same "slenderness ratio" as the drill pipe size and lengths given above, we will find that our wires have the length of 60.37 feet for the one representing the 6⅝-inch size, 93.5 feet for the 5$\frac{9}{16}$-inch size and 133.33 feet for the 4½-inch size. We now fashion a miniature fishtail bit about three times the diameter of the wire and start drilling by clamping a hand vise on the upper end of the wire in order to rotate it. If the wire is suspended vertically, we have something of the condition which exists in an oil well. The comparison is not exact, the wire is not as stiff in proportion to its length as the drill pipe and the drill pipe is confined in a hole which will not allow it to bend or flex—much. However, it is a great deal to ask of a piece of steel pipe from 9,000 to 20,000 times as long as it is thick, resting with its bottom end on a solid support to allow it to bear down on the bottom with even a small portion of its own weight and then not expect it to flex or bend all it can. It will certainly bend over until the drill pipe touches the side wall of the hole.

Spring Balance

On the other hand, consider a drill pipe hanging from the hook of the casing block or set in the slips of the rotary table in such a manner that the bit is just clear of the bottom of the hole and the entire weight of the drill pipe is borne by the casing block or hung from the slips of the rotary table, as the case may be. Consider further, that the pipe is cut just below the hook or table and also at a point half-way down the length of the drill pipe and again just above the drill collar. We may further consider that each of the severed pieces are joined together by means of a suitable spring balance arranged to indicate the weight hanging below each. We will then have the condition shown in Figure 1. The upper spring balance will indicate the total weight of the drill pipe plus the weight of the drill collar and the bit. The second spring balance, halfway to the bottom of the hole, will show the weight of the drill pipe below the point of its installation plus the weight of the drill collar and bit. This will amount to slightly more than half of the weight indicated by the upper spring balance. Clearly, the drill pipe at its upper end is in tension or is stretched by the weight of the drill pipe, drill collar and bit below it. Similarly, the drill pipe at the point of the middle spring balance is also in tension, although the

(Continued on Page 172)

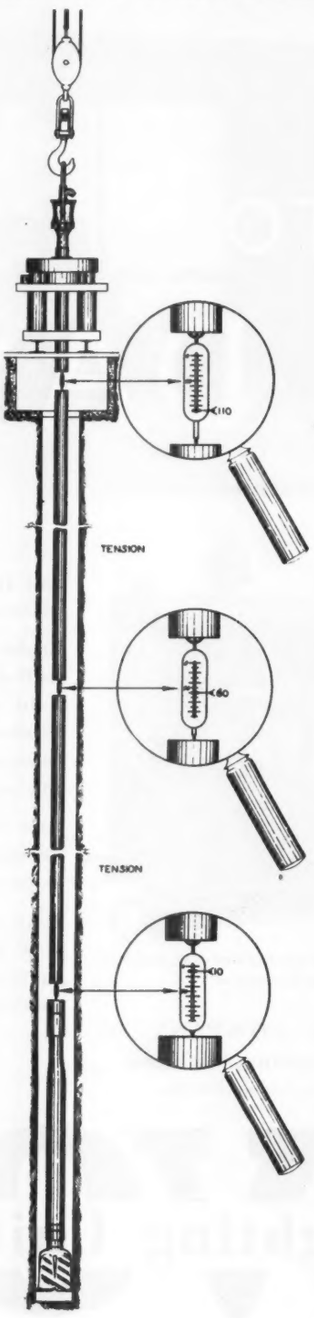

FIG. 1

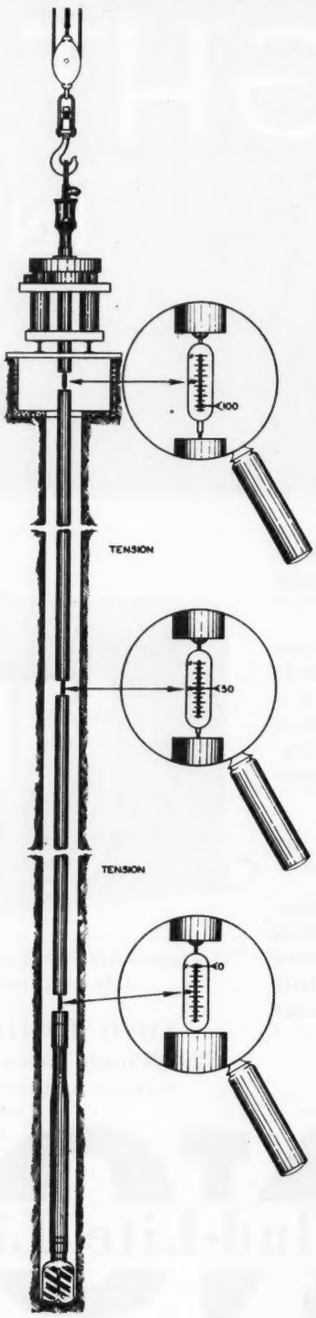

FIG. 2

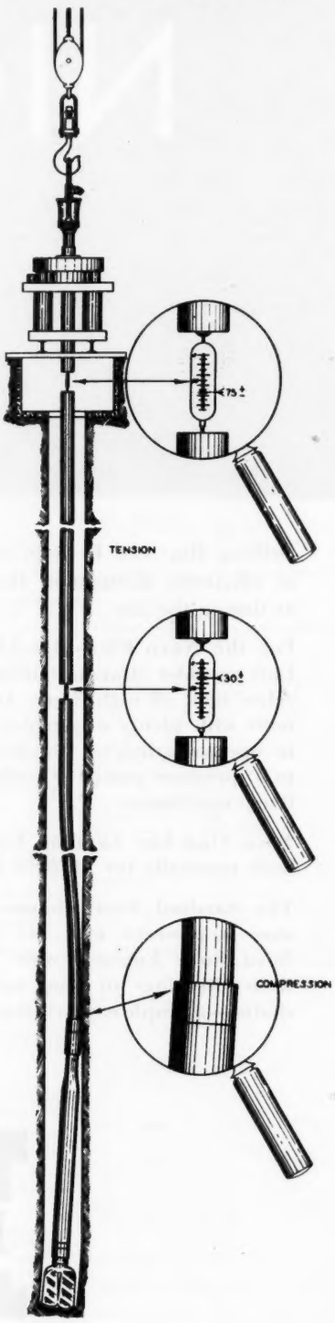

FIG. 3

*Engineer Doheny Stone Drill Co., Los Angeles, Calif.

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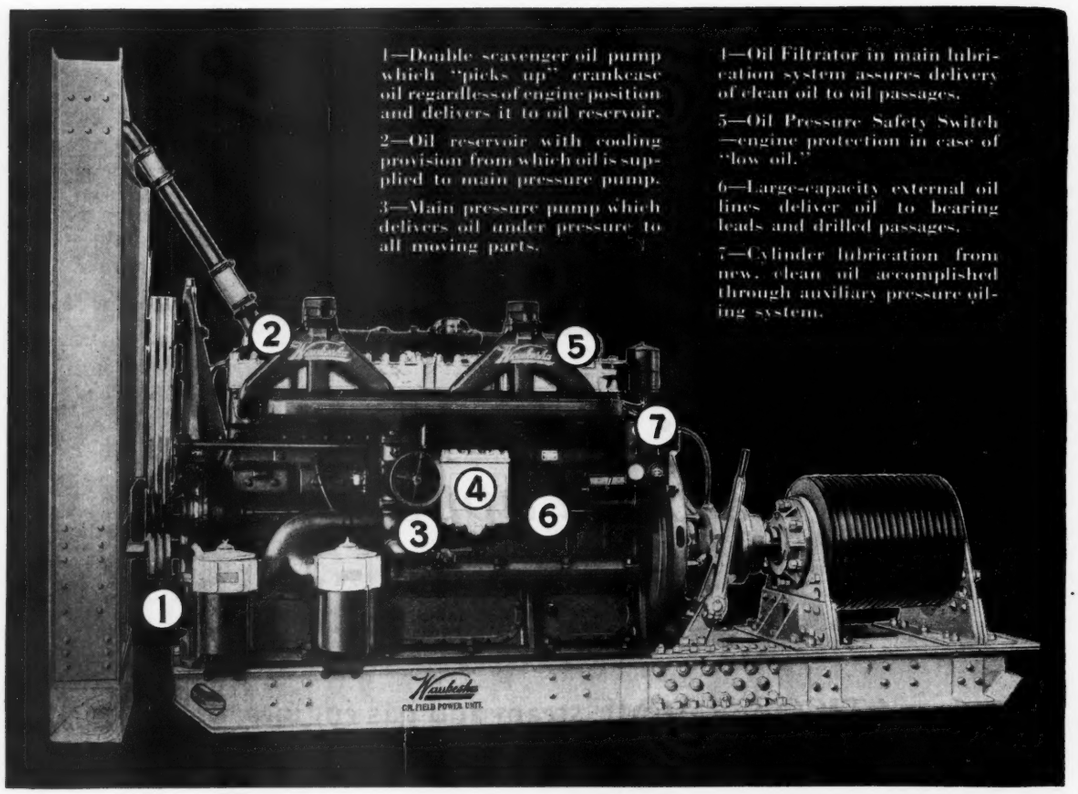
1—Double scavenger oil pump which "picks up" crankcase oil regardless of engine position and delivers it to oil reservoir.
2—Oil reservoir with cooling provision from which oil is supplied to main pressure pump.
3—Main pressure pump which delivers oil under pressure to all moving parts.
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1
2
3
4
5
6
7
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WAUKESHA ENGINES

ROCKY MOUNTAIN AREA

(Continued from Page 58)

new operations getting under way in Eddy County. Etz Brothers' No. 1 Etz, C SE SE, Section 13-16-30, in the Maljamar area, northeast of the Artesia Pool, was completed after plugging back to 3,847 fee, making 2,000,000 feet of wet gas. It had 50 feet of salt water at 3,847-50 feet, and oil shows at 3,212 and 3,370 feet. It cut the salt at 505-1,234 feet. The elevation is 3,887 feet. Leonard & Levers' No. 2 State, SE cor. NW, Section 21-17-29, is a new location. It is an offset on the northwest to the firm's No. 1 State which was completed as a gas well. The firm recently made a contract with the Pecos Valley Gas Co. to use the gas from these wells. It is planned to continue to drill for gas until a reserve supply of 15,000,000 feet a day has been built up. Flynn, Welch & Yates' No. 2 Stephens, NW NE SW, Section 13-17-30, is spudding, and L. M. Lockhart and others' No. 2 Wooley, NE cor., Section 28-17-30, cemented the 10-inch at 1,251 feet in anhydrite and is waiting. Henderson, Dexter & Blair's No. 1 Grier, SW cor. NW, Section 21-16-31, is drilling at 90 feet in red rock. It commenced spudding on January 30. The same firm's No. 1 Arnold, NE SE SE, Section 23-17-30, had 900 feet of oil in the hole at 3,200 feet and is drilling at 3,227 feet in gray lime. It had oil and gas shows at 3,180-85 feet. Naylor and others' No. 2 Danciger, NW cor. SW, Section 18-17-31, is drilling at 3,545 feet in lime. Flynn, Welch & Yates' No. 57 State, NE cor. SE, Section 19-19-28, is shut down at 2,485 feet in lime and showing for 500,000 feet of gas per day.

Chaves County

The Cactus Petroleum Co.'s No. 1 State, SE cor., Section 14-10-26, has resumed after being idle for several weeks and is drilling at 1,814 feet in dark lime.

Valencia County

The Acme Development Co.'s No. 1 Santa Fe, SW NW, Section 27-7s-4w, is bottomed in sand at 4,535 feet and is preparing to resume after cementing the 5⅜-inch.

Rio Arriba County

Jarvis, Bennett and others' No. 1 Dulce Dome, NE SW, Section 8-31-1w, is shut down at 2,536 feet in a water sand, the second in the Dakota series and is flowing 2,000 bbls. a day. The first sand, which was dry, was at 2,420-90 feet and the second at 2,513-36 feet.

UTAH

The Carbon Dioxide & Chemical Co., which is identified with the Fulton Petroleum Co., is moving in material for its No. 1, NE SE SW, Section 12-15s-11e, on the Farnham Dome in Carbon County, Utah. The location is an offset on the south to a well drilled in 1924 by the Utah Oil Refining Co. which had 2,000,000 feet of carbon dioxide gas at 3,235 feet. The new operation is intended to develop a supply of carbon dioxide gas for the manufacture of dry ice. The Utah-Pennsylvanian Oil Co.'s No. 1, NW NW, Section 3-10-4w, Penrose Dome, Box Elder County, is drilling at 3,450 feet in the Pennsylvanian lime with 3,000 feet of water in the hole. The Midwest Refining Co.'s No. 31 Pary, SW SE, Section 14-39-1w, Kane County, cemented the 12½-inch on bottom at 1,836 feet and is waiting.

COLORADO

The registrar of the United States land office at Pueblo estimates that 90 per cent of the prospecting permits issued several years ago in Baca, Prowers and Bent Counties have been cancelled for failure to comply with the government's requirements. When there was considerable activity in that area several years ago, almost everything open was filed upon regardless of whether the land was on or near any structure. Holders of permits who could show reasonable expenditures for geological work on permits where this work was beneficial to the government have been granted extensions. No new applications for permits are being received.

Moffat County

Another test of the Elk Springs structure 60 miles west of Craig probably will be started this spring. The permits held by the Elk Springs Oil & Gas Association have been extended by the government and negotiations for another test are under way. This association is composed of three brothers, Dave, Tom and Ben Morgan, and C. H. Wolcott. Dave Morgan has the distinction of being the first white settler in the Bear River Country and he and his associates have never lost faith in the oil possibilities of the Elk Springs structure. Several shallow wells have been drilled and in 1924 the Union Oil Co. of California drilled a deep well on the NE NW, Section 31-5n-98. It was abandoned at 3,973 feet when it ran out of hole. The Sundance was not tested in this well. Little information was given out concerning the operation, but it is generally understood that the horizon at 3,665 feet where it had a flow of gas estimated as high as 12,000,000 feet a day, was the Dakota. In the shale above that horizon it had considerable oil.

The Texas Production Co.'s No. 1 Berlin, SW NE, Section 19-12n-100, Bartram Dome, is resuming at 2,347 feet after being shut down on account of cold weather. This well has so far had an aggregate gas flow of 72,000,000 feet a day from four horizons in the Wasatch. One mile to the southwest of this well, the Mountain Fuel Supply Co.'s No. 1 Lasher, NW NE NE, Section 25-12n-101, cemented the 7⅝-inch casing at 1,528 feet. The Texas Production Co.'s No. 12 Knowlton, SW SE, Section 33-5n-91, Moffat Dome, which was forced to suspend last December on account of the cold weather, is resuming and has rig completed and is about ready to commence spudding. It will go to the Sundance and is the only well being drilled on that structure. The Midwest Refining Co.'s No. 24 Hannewalt, SE SE, Section 4-6n-92, Bell Rock structure, is drilling with 15½-inch bit at 1,100 feet in shale and coal. The same company's No. 19-SD Parkinson, SW NE, Section 22-4n-92, Iles Dome, is bottomed at 2,045 feet and running 1,000 feet of the 13-inch.

Arapahoe County

The McDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, is bottomed at 5,090 feet and preparing to sidetrack. There were 5,070 feet of the 6¼-inch in the hole when the string parted at 3,990 feet. The hole has been cleared down to that depth.

Yuma County

The Phillips Petroleum Co.'s No. 1 Andrews, NW NW, Section 3-2s-42, Rosenkrantz structure, is drilling at 4,994 feet and carrying the 6⅝-inch.

Adams County

Nettie M. Slatt and others' No. 1 Hills, SE cor., Section 27-3s-64, is resuming at 1,004 feet after being idle on account of the cold weather. The 12½-inch is on bottom.

Pueblo County

The Beulah Dome Syndicate's No. 1 Hedland, NW SW, Section 7-23-67, is resuming at 932 feet after being idle since last November.

Bent County

The Continental Oil Co.'s No. 1 Pipe Springs, NE SE, Section 27-27-49, is bottomed in sand at 5,504 feet and cleaning out at 5,370 feet.

Las Animas County

The American Helium Gas & Oil Co.'s No. 1 Bolling, NW SW, Section 3-29-60, Thatcher Dome, has recovered tools, which were lost at 60 feet, and is cleaning out. The Trinidad Development Co.'s No. 1 Flonz, NE SW, Section 23-32-63, is bottomed at 2,700 feet and making third attempt at a water shutoff.

Boulder County

The Reliance Oil Co.'s No. 1 Erickson, NE NW, Section 33-2n-70, in the heart of the old Boulder Field, is drilling at 3,010 feet. It had considerable oil at a horizon above the present depth. A number of producers were drilled on this section 20 years ago and a few years ago the Midwest Refining Co. drilled a deep test which was abandoned at 2,920 feet without reaching the Morrison and Sundance formations.

Larimer County

The Continental Oil Co.'s No. 5 Scott, NE NW, Section 6-9n-68, Wellington Dome, is drilling at 1,910 feet. The 13⅜-inch was cemented at 1,170 feet.

Rio Blanco County

The Texas Production Co.'s No. 1 Potter, NE SW, Section 30-2n-96, White River Dome, has recovered drill stem that was twisted off and is coring at 5,701 feet.

Dolores County

The Transcontinental Oil Co.'s No. 1 Glade, Section 30-41-16, has shut down until spring at a total depth of 5,900 feet.

LaPlata County

The Detroit Oil Association's No. 1 Olbert, Section 9-35-12, is drilling at 2,015 feet after being idle for some time. The objective is the LaPlata, or Sundance sandstone of Jurassic age. It is through the Dakotas.

WYOMING

The Little Buffalo Basin structure in Park and Hot Springs Counties, Wyoming, one of the first fields of the State to be operated on a unit basis and which has shown practically no change in its status since 1914, came in for attention this week when a gas well was completed between the twin domes by the Grebo Royalties, Inc. This company's No. 1 State, SE NW SE, Section 4-47n-100, in Park County, which has been standing since 1928, was drilled 1 foot deeper the past week and was completed as a commercial well with a flow estimated at better than 5,000,000 feet a day.

The Little Buffalo Basin structure was drilled in 1914 by the Ohio Oil Co. and gas was found in the sands of the Frontier formation. That company and the Midwest Refining Co. drilled altogether 10 gas wells, none of which went far below the Frontier, though there are several important horizons below that formation which are productive in the near-by Grass Creek, Oregon Basin and other fields. The Ohio and Midwest controlled practically all the structure and the United States Government, the State of Wyoming and the leaseholders reached an agreement for the unit operation of the field. The gas is being marketed in the Big Horn Basin. Two years ago the Grebo Royalties, Inc., secured a state lease on the structure about midway between the two highs and started a test for oil. The first Wall Creek was topped at 1,491 feet and was dry. The second Wall Creek was topped at 1,685 feet. It had a slight show of green oil in the top of the sand and at 1,682 feet it began making gas. The gas increased to 1,699 feet when operations were suspended and the 10-inch was cemented at 1,684 feet. It stood at that depth until recently when drilling was resumed. The cement was drilled out and the hole deepened 1 foot to 1,700 feet, when the gas showed a considerable increase. In the meantime the situation has undergone a change and a prospective market for the gas has developed. It is not likely that deeper drilling for oil will take place in this hole. The company is, however, drilling its No. 1 McGrath, NE cor. SE, Section 3-47-100, which cemented the 15½-inch at 309 feet and shut down until spring. The location of the No. 1 State well indicates that both domes are full of gas in the Frontier. Some day drilling to deeper horizons may make oil history. The closure around the two domes is approximately 2,500 feet and about 5,000 acres are inside the closing contour.

Park County

Operations in Park County, exclusive of Little Buffalo Basin, include the following: Charles E. Orchard's No. 1 Atherly, SW cor., Section 33-52-100, Oregon Basin, has been completed at 2,785 feet as a gas well in the red beds with an open flow of 1,600,000 feet a day. It may be carried on down to the Embar at a later date. The Owens and Rue wells drilled to the top of the Embar by Mr. Orchard are still shut down. A recent ruling made by the Rocky Mountain Division of the United States Geological Survey requires the operators to produce from only one sand at a time in the individual wells in Oregon Basin. This ruling was made necessary by water encroachment in some of the wells where they were being produced from two or more horizons simultaneously, making it difficult to know how to go about shutting off the water. Companies observing the precaution of taking cores of different formations were not bothered with water in most instances and most of their wells have been producing only clean pipe line oil. The Wyoming Western Oil Co.'s No. 3 Hough, SE cor., Section 18-51-100, is bottomed at 4,596 feet and fishing for tools. The Y-Tex Oil Co.'s No. 1, SE SW, Section 16-51-100, is spudding in new hole after skidding rig, and the Cody Petroleum Co.'s No. 1-B Klindt, NE SW, Section 6-51-100, is drilling at 2,100 feet. The Oneida Oil Co.'s No. 1 Beck, SW cor., Section 28-52-100, is sidetracking bit at 2,120 feet. Outside of Oregon Basin, the Ohio Oil Co.'s No. 1 Burlington, SE SW, Section 21-53-101, Shoshone Dome, is drilling out plug after cementing the 8⅝-inch at 4,312 feet. The Midwest Refining Co.'s No. 31 Rosenberg, SW NE, Section 25-58-98, Frannie Dome, is bottomed at 1,324 feet in gray shale and underreaming the 13-inch at 1,282 feet.

Big Horn County

The Yellowstone Petroleum Co.'s No. 1, NW NE SE, Section 7-57-97, Sage Creek, is bottomed at 3,065 feet and sidetracking tools. It topped the Embar at 2,815 feet and found water in the Tensleep at 2,870-2,928 feet. The Embar was dry. The Ohio Oil Co.'s No. 1 Union Gas, NE cor., Section 22-56-97, Byron Dome, is fishing for pipe at 4,607 feet.

Hot Springs County

The Ohio Oil Co.'s No. 1 Smith, SE NE, Section 9-46-99, Walker Dome, is drilling at 3,120 feet. A substantial showing of oil in the Frontier is reported in this well. The location is on Enos Creek just west of the Grass Creek Field.

Salt Creek

A small well in Salt Creek was found in the Wyoming Associated's No. 36-SD-3, NE, Section 34-40-79, which was completed in the third Sundance at 2,895 feet with a production of 89 bbls. the first 24 hours. The Midwest Refining Co.'s No. 29-DT, NW, Section 35-40-79, again is making hole after casing off several thousand barrels per day production in the third Sundance and is drilling at 3,330 feet.

Johnson County

The Kaycee Dome Syndicate's No. 3, C SE SE, Section 4-43-82, is bottomed at 840 feet and working on the 10-inch casing. It had 700 feet of water in the hole from the Sundance.

Fremont County

The Texas Production Co.'s No. 1 State, SW SW, Section 36-34-95, Alkali Butte, is drilling at 2,710 feet.

Sweetwater County

The Mountain Fuel Supply Co.'s No. 1 Sullivan, SW SW, Section 10-16-104, South Baxter Basin, is drilling at 3,380 feet, and its No. 1 Union Pacific, Section 11-17-104, is drilling at 2,570 feet. All of the other operations of this company in Sweetwater County are shut down. The Hidden Treasure Oil Co.'s No. 1, Section 32-21-103, North Baxter Basin, is drilling with standard tools at 2,505 feet and carrying the 10-inch.

Uinta County

The California Co.'s No. 1 Union Pacific, NE NW, Section 17-17-116, is drilling at 4,615 feet, and the Park City Oil & Gas Co.'s No. 1 Christensen, Section 6-15-113, is bottomed at 1,840 feet and underreaming the 8¼-inch to shut off water at 1,400-30 feet.

IDAHO

The Grand Teton Oil Co.'s No. 1 Blevins, Section 33-5n-44, Teton County, is bottomed at 1,925 feet and underreaming the 10-inch. The Monida Oil Co.'s No. 1 Rose, Section 32-14-36, Clark County, is drilling at 1,100 feet.

MONTANA

The new border field is claiming all the interest at this time and it appears there will be much activity there. There are three commercial producers, two on production, and the third being drilled deeper.

One of the most interesting developments of the week is the discovery that there is a strip of land through the cen-

ter of the field, from 80 to 120 feet in width, and not claimed by either the United States or Canada. A settlement of title is asked for by those who claim it.

The Raven Oil Co., of Lethebridge, Canada, has started moving in material for a well. The wells now active follow: The Vanalta No. 1 is the discovery well and is on the Canadian side. It is making an average of 75 bbls. daily. The Mid-Continent Oil Co. well is on the Montana side and is making about 100 bbls. although over the weekend it averaged 120 bbls. per day. The Cosmos Petroleum Co.'s well is flowing water and oil while being drilled deeper. This well sent a column of fluid over the derrick when it came in and was first rated at 5,000,000 feet daily, then it commenced to show oil. It was in a sand above the pay sands of the other two wells and is now being drilled.

Vanalta No. 2 is drilling at 1,744 feet and the Monalta No. 2 at 2,300 feet. The Mid-Continent Oil Co. has a cellar dug and the rig going up for No. 2. The Kotops well is drilling after recovering a lost string of tools; this well will extend the field about 3 miles if it finds production. Monalta No. 3 has the derrick up for a rotary hole.

Only two wells are active in Sunburst Field, both deep tests and specially equipped to withstand extreme cold weather. The thermometer went to 50 below during the past few weeks in Sunburst and all wells shut down until the weather warms up.

The State of Montana granted lease on 3,791 acres of state land to applicants for leases the past week. Some are in Glacier County where no oil activity has ever been known. The State will derive an income of $2.843 from the rental.

Rocky Mountain Production

Daily average pipe line runs from the various pools in the Rocky Mountain area for the week ending February 15:

WYOMING:	Bbls.
Salt Creek	30,940
Frannie	....
Big Muddy	2,080
Oregon Basin	4,240
Dutton	....
Elk Basin	710
Ferris	20
Grass Creek	1,970
Hamilton	760
LaBarge	2,170
Lance Creek	160
Lost Soldier	2,850
Osage	890
Poison Spider	270
Rock River	2,290
Rex Lake	90
Lander	500
Simpson Ridge	50
Teapot Dome	40
Greybull	....
Total	50,030
MONTANA	
Cat Creek	1,200
Kevin-Sunburst	5,940
Pondera	2,000
Lake Basin	70
Total	9,210
COLORADO	
Moffatt	1,053
Fort Collins	1,601
Florence	525
Iles	1,004
Tow Creek	488
Boulder	100
Rangley	25
Total	4,796
NEW MEXICO	
Artesia	1,014
Cap Rock (Maljamar)	1,151
Hogback	400
Rattlesnake	486
Table Mesa	....
Jal	1,399
Hobbs High	22
Getty	....
Lea	5,684
Miscellaneous	250
Total	10,406
Grand total	74,442

OKLAHOMA FIELDS

(Continued from Page 80)

Company, farm—	S.T.R.	Wells	prod.
Ellen	11-8-6	5	237
Harjo, E.	14-8-6	3	287
Jones	9-8-6	7	137
Taylor, M.	10-8-6	4	510
Taylor, W.	10-8-6	3	375
Walker, I.	22-8-6	4	613
Texas:			
Reed	14-8-6	11	462
Tidal:			
Grayson	13-8-6	4	448
Harjoche	10-8-6	6	1,044
Total		293	22,851
Earlsboro Pool			
Amerada:			
Anderson	15- 9-5	1	756
Cowden	4- 9-5	7	595
Rogers	3- 9-5	2	24
Barnsdall:			
Brown	10- 9-5	3	535
Bruner, F.	3- 9-5	2	135
Bruner, N.	10- 9-5	2	124
Cudjo	14- 9-5	1	22
Davis, D.	11- 9-5	3	82
Davis, J.	11- 9-5	4	354
Davis, M.	11- 9-5	2	17
Gibson	9- 9-5	7	528
Hearn	15- 9-5	1	Off
Ingram, J.	1- 9-5	6	207
Pack, S.	10- 9-5	3	43
Peter	10- 9-5	3	34
Sango	1- 9-5	2	486
Soboika	15- 9-5	1	108
Sullivan	15- 9-5	1	3
Sull-Harjo	10- 9-5	2	9
Watsutka	12- 9-5	3	333
Burke-Greis:			
Wisener	6- 9-6	2	155
Burke-Greis-Red Bank:			
Mayes	1- 9-5	3	1,124
Carter:			
Cox	31-10-6	1	31
Davis, S.	13- 9-5	3	41
Gilliam	13- 9-5	2	799
James	6- 9-6	3	1,054
Shepherd	6- 9-6	2	246
Continental:			
Keys	2- 9-5	2	49
Spencer	12- 9-5	4	291
Cosden:			
Anderson	13- 9-5	2	100
Sarber	13- 9-5	1	38
Empire:			
Barker	12- 9-5	1	25
Edmundson	3- 9-5	2	41
Empire-Amerada:			
Bullock, W.	8- 9-5	3	885
Henry	8- 9-5	1	752
Empire-Continental:			
Anderson	13- 9-5	2	70
Empire-Gypsy:			
Keys	6- 9-5	1	24
Gypsy:			
Bruner	10- 9-5	4	804
Carter, B.	11- 9-5	7	1,374
Earl	16- 9-5	1	10
Hunick	5- 9-5	2	930
Noble	12- 9-5	3	345
Peter	10- 9-5	1	56
Sango	7- 9-5	9	942
State	16- 9-5	2	124
Wisener	1- 9-5	1	26
Eason Oil Co.:			
B.S.&B.	8- 9-5	1	297
White	8- 9-5	1	664
Eason Oil Co.-C. E. Knox:			
Langford	8- 9-5	1	1,304
E. Haer:			
Haer	31-10-5	1	20
Hubbell-Graham:			
Dobbs	8- 9-5	2	72
Independent:			
Bruner	10- 9-5	3	81
Sullivan	10- 9-5	1	9
Independent-Darby:			
Knapp	8- 9-5	2	84
Independent-Margay:			
Gaines	11- 9-5	3	52
Magnolia:			
Bryant	9- 9-5	2	17
Cowden	4- 9-5	1	17
Dixon	12- 9-5	1	11
Edmundson	3- 9-5	1	3
Germany, M.	30- 9-5	1	6
Gilliam	13- 9-5	3	1,046
Grounds	23- 9-5	1	151
Homsley	11- 9-5	3	7
Hyde	13- 9-5	2	64
Ingram	10- 9-5	1	4
Lena	10- 9-5	3	22
Seay	12- 9-5	9	129
Simpson	10- 9-5	4	170
Sparks	11- 9-5	6	71
Sullivan	12- 9-5	2	121
Mid-Continent:			
McKinley	9- 9-5	3	16
Rogers	5- 9-5	5	645
Mid-Kansas:			
Anderson	14- 9-5	1	25
Phillips:			
Dunaway	14- 9-5	1	17
Reade	8- 9-5	2	730
Prairie:			
Davis	13- 9-5	3	33
Graham, C.	3- 9-5	1	3
Graham, O.	10- 9-5	4	562
Stidham	11- 9-5	9	159
Prairie-Skelly:			
Campbell	6- 9-6	7	1,866
Prairie-Whitney:			
Harjo	24- 9-5	1	Off
Shaffer:			
Clark	1- 9-5	2	160
Shell:			
Bayless	17- 9-5	1	10
Hearn	13- 9-5	1	19
Spencer	12- 9-5	2	309
Sinclair:			
Alexander	36-10-5	1	410
Foreman	18- 9-5	1	12
Sango	2- 9-5	4	350
Sinclair et al:			
Foreman	18- 9-5	1	100
Skelly:			
Mayes	1- 9-5	4	260
Sheppard	6- 9-6	4	1,531
Spencer	12- 9-5	1	359
Skelly-Atlantic:			
Cherry	6- 9-6	4	453
Lottie	6- 9-6	3	135
Skelly-Prairie:			
Varnum	5- 9-6	2	290
Superior:			
Ingram	1- 9-5	2	801
Songster	8- 9-5	2	708
Walker	2- 9-5	2	746
Skelly-Shaffer:			
McCay	36-10-5	1	170
Texas:			
Anderson	2- 9-5	8	88
Brown	10- 9-5	8	55
James	6- 9-6	2	160
Rogers	5- 9-5	5	21
Wilmot	10- 9-5	6	63
Tidal:			
Walker	35-10-5	2	648
Watkins	9- 9-5	7	909
Twin State:			
Anderson	22- 9-5	1	5
Barker	12- 9-5	2	20
Hearn	2- 9-5	2	41
Magruder	7- 9-5	1	141
Total		294	32,181
East Earlsboro Pool			
Amerada-Dixie:			
Fullerton	19-9-6	4	4,733
Scott	19-9-6	1	1,180
Sullivan	17-9-6	4	1,260
Barnsdall:			
Gilliam	13-9-5	1	66
Noble	18-9-6	5	1,048
Burke-Greis-Red Bank:			
Fixico	17-9-6	3	1,043
Carter:			
Campbell	20-9-6	1	1,775
Chowning	19-9-6	1	270
Harber	7-9-6	3	1,442
Wrightsman	19-9-6	4	2,433
Continental:			
McGuire	24-9-5	1	667
Gypsy:			
Maley	20-9-6	4	1,075
Noble, B.	18-9-6	4	1,192
Gypsy-Devonian:			
Payne	18-9-6	12	3,397
Independent-Atlantic:			
Fixico, L.	20-9-6	3	1,930
Magnolia:			
Anderson, A.	18-9-6	12	3,216
Anderson, D. W.	18-9-6	4	1,078
Anderson, Panos	18-9-6	3	845
Moore	24-9-5	3	685
Mid-Continent:			
McDaniels	7-9-6	1	79
Minnehoma:			
Noe	17-9-6	5	1,154
McMan:			
Jones	20-9-6	1	669
Prairie:			
Baker	24-9-5	5	231
Calkins	17-9-6	3	599
Raitman	18-9-6	3	1,006
Wisner	18-9-6	1	5
Prairie-Slick:			
Wilson	8-9-6	1	28
Producers & Refiners:			
Jefferson	19-9-6	3	1,373
Shell:			
Hopper	19-9-6	8	11,436
Sinclair:			
Miller	24-9-5	1	87
Nichols	19-9-6	8	2,860
Texas:			
Magruder	19-9-6	6	1,379
Tidal:			
Lasley	19-9-6	2	2,577
Tidal et al:			
Harjo	20-9-6	1	179
Total		122	52,997
Seminole Pool			
Amerada:			
Fixico	23-9-6	2	60
Killings	25-9-6	4	208
Rentie	23-9-6	3	262
Atlantic:			
Cudjo	35-9-6	3	256
Barnsdall:			
Carter	24-9-6	6	124
Henry	14-9-6	2	241
Jones	34-9-6	4	346
Carter:			
Carter, B.	24-9-6	2	30
Carter, F.	23-9-6	3	80
Creamer	34-9-6	1	4
Cudjo, R.	35-9-6	4	89
Cudjo, W.	34-9-6	1	53
Gilliland	27-9-6	1	89
Grisso	23-9-6	4	55
Grisso, M.	15-9-6	1	171
Killing, G. F.	14-9-6	4	38
Killing, M. E.	23-9-6	12	3,604
Knapp	13-9-6	1	30
Lukes	27-9-6	5	727
Pounder	34-9-6	2	120
Simpson	35-9-6	2	93
Strothers	34-9-6	4	291
Vierson	23-9-6	1	26
Carter et al:			
Sanford, C.	16-9-6	1	155
Wisner, C.	16-9-6	1	61
Darby:			
Carter, J.	24-9-6	4	88
Fixico	26-9-6	7	1,186
Harjo, D.	25-9-6	1	32
Harjo, T.	23-9-6	3	35
Empire:			
Gross	25-9-6	1	40
Wilson	34-9-6	2	170
Gypsy:			
Butler	35-9-6	4	95
Carter	24-9-6	8	618
Cudjo, T.	34-9-6	4	394
Fixico	26-9-6	7	70
Harjo	25-9-6	3	46
Wolfe	26-9-6	4	209
Independent:			
Butler	35-9-6	3	265
Fixico, P.	23-9-6	3	391
Harjo	25-9-6	2	10
Independent-Garland:			
Fixico, T.	26-9-6	5	144
Independent-Inter-Ocean:			
Jones	26-9-6	4	263
I. T. I. O.:			
Allen	25-9-6	2	26
Bowlegs	26-9-6	12	1,309
Goodin	23-9-6	3	149
Harjo	23-9-6	3	28
James	24-9-6	2	38
Reed	24-9-6	1	8
Kingwood-Shell:			
Harjo	22-9-6	3	236
Magnolia:			
Boren	2-8-6	1	2
Franks	25-9-6	3	156
Mid-Continent:			
Rentie	14-9-6	9	343
Tayeche	24-9-6	5	110
Phillips:			
Strothers	27-9-6	2	56
Prairie:			
Cudjo, R.	35-9-6	3	395
Franks	35-9-6	6	660
Giblet	35-9-6	3	863
Gross	25-9-6	5	18
Mason	36-9-6	1	38
Spencer	13-9-6	1	5
Strothers	27-9-6	8	739
Tiger	1-8-6	1	23
Pure:			
Strothers	26-9-6	17	2,606
Strothers "B"	36-9-6	4	122
Strothers "C"	34-9-6	1	214
Shell:			
Harber	22-9-6	1	71
Lasley	22-9-6	2	47
Sinclair:			
Carter, J.	13-9-6	2	15
Cudjo "A"	35-9-6	6	350
Cudjo "B"	35-9-6	4	386
Dixey	22-9-6	2	305
Fixico	23-9-6	4	300
Superior:			
Cudjo, B.	35-9-6	4	58
Noble	15-9-6	1	Off
Texas:			
Mayhue	14-9-6	2	400
Strothers	2-8-6	1	35
Turman:			
Cudjo	35-9-6	4	432
Grisso	35-9-6	1	180
Jones	34-9-6	4	225
Total		273	22,217
East Seminole Pool			
Barnsdall:			
Keypaya	7-9-7	1	14
Blackwell:			
Jonah	15-9-7	1	122
Continental:			
Boring	17-9-7	1	42
Johnson	18-9-7	3	596
Continental-Sinclair:			
Perry	18-9-7	3	524
Devonian:			
Harjo	18-9-7	1	12
Gypsy:			
Harjo	18-9-7	2	243
Magnolia:			
Drewery	18-9-7	2	10
Prairie:			
Stubbs	18-9-7	3	283
Shaffer:			
Hangler	19-9-7	1	Off
Sinclair:			
Coody, B.	18-9-7	3	430
Coody, D.	17-9-7	1	25
Johnson, G.	18-9-7	1	109
Johnson "B"	18-9-7	1	75
Thompson "B"	18-9-7	2	1,676
Sinclair-Continental:			
Warrior, J.	17-9-7	2	30
Sinclair-Gypsy:			
Okfuskee	18-9-7	1	130
Sinclair-Phillips:			
Warrior, S.	17-9-7	2	65
Total		31	4,286
Searight Pool			
Amerada:			
Johnson	4- 9-6	1	18
Nicey	3- 9-6	1	Off
Strothers	3- 9-6	2	87
Barnsdall:			
Jackson	5- 9-6	2	16
Johnson	22-10-6	1	17
Burke-Greis et al:			
Nevins	32-10-6	2	726
Varnum	32-10-6	1	247
Carter:			
Davis	4- 9-6	2	169
Frazier	3- 9-6	5	61
Kiker	2- 9-6	1	21
Mandler	3- 9-6	2	7
Scott	26-10-6	1	10
Amerada (Comm.)	11- 9-6	1	12
I.T.I.O. (Comm.)	11- 9-6	1	209
Mayhue (Comm.)	11- 9-6	3	1,245
McMan (Comm.)	11- 9-6	1	162
Skiff (Comm.)	10- 9-6	1	26
Slick (Comm.)	11- 9-6	2	343
Stewart (Comm.)	10- 9-6	1	151
Strothers (Comm.)	11- 9-6	3	714
Gypsy:			
Cudjo, M.	4- 9-6	3	500
Nevins	32-10-6	2	259
Saloche	31-10-6	1	49
Magnolia:			
Varnum	32-10-6	3	30
Varnum, W. F.	5- 9-6	1	320
Mid-Continent:			
Grayson	34-10-6	4	24
Saloche	33-10-6	5	282
Mid-Continent-Homaokla:			
Nevins	32-10-6	4	410
Papoose:			
Marks	32-10-6	1	150
Pine, W. B.:			
Lulu	4- 9-6	1	48
Prairie:			
Cannon	33-10-6	1	1
Carter, J.	10- 9-6	1	Off
Hauck	33-10-6	1	2
Hunford	32-10-6	1	13
Kinkaid	33-10-6	2	35
Weimer	22-10-6	1	8
Pure:			
Aldridge	3- 9-6	3	584
Shell:			
Crump	32-10-6	1	Off
Strothers	3- 9-6	3	74
Sinclair:			
Polly	3- 9-6	4	875
Superior:			
Varnum	4- 9-6	1	15
Texas:			
Fleet	4- 9-6	1	15
Twin State:			
Varnum	4- 9-6	2	86
Wilcox:			
Chupco	4- 9-6	6	173
Total		87	8,194

GAS BUBBLES WITHIN CAPILLARY SPACES

(Continued from Page 42)

voir 2, stopcock k is opened and both reservoirs are filled. Stopcock u is opened and all burettes are filled to the top. When all the air has been eliminated, stopcock s is closed and tube s is connected to a tank containing the gas used in the experiment. The gas is introduced through s, displacing part of the liquid. Burette 7 is connected to reservoir 3, both being filled with water and care being taken not to let any of the enclosed gas become contaminated. To catch a bubble, the stopcocks t, r, o and u are kept closed and all the others are opened. By raising reservoir 3, the pressure in 6 forces the water level f down, e up and c down. When e reaches the level d, gas begins to enter the capillary tube at z. By proper adjustment of reservoir 3 a suitable bubble length is obtained in the capillary tube. When stopcock o is opened, the water level d will rise and catch the bubble without changing the pressure of the system because stopcock p is kept open and the volumes of both liquid and gas remain unchanged. This is very important because the slightest variation in pressure will force the bubble out of the capillary tube. The tube yz serves to measure the bubble, its radius (0.011 cm.) being known. Stopcock n is closed and the bubble is forced into m and then into j. Stopcocks n and k are both left open and u, o and p are closed. The two micrometers are adjusted to read the level of the liquid in 1 and 2; k is closed, u is opened and the pressure in reservoir 1 is increased by lifting reservoir 3. Before any pressure is applied the bubble in j has a shape approaching a sphere. As the pressure is increased the bubble advances toward the capillary tube. The maximum pressure is reached when the upper end of the bubble has just penetrated into the smallest capillary space. The pressure is recorded by the difference between the readings of the two micrometers. One determination consumes four to five hours. Getting the bubble into the capillary tube yz is the most difficult part of the operation.

Experiment 1

A bubble of methyl alcohol was introduced in capillary tube yz. All stopcocks were closed excepting o and u. The micrometers were adjusted and the position of one of the menisci of the bubble was read against the horizontal scale attached to the capillary yz. The micrometer readings are given to 0.0001 m. The position of the bubble can be read to 0.1 mm. and the first two readings given in Table 1 are taken at 5-minute intervals. The readings of the micrometers and the position of the bubble during the experiment are given in Table 1.

TABLE 1

Position of bubble—	Micrometer 1	Micrometer 2	Difference between readings	Differential pressure*	Displacement of bubble cm.
460-460	506.1	647.8	141.8	0.0	none
460-470	507.5	549.0	141.4	0.4	0.10
470-500	508.0	549.0	141.0	0.8	0.30
585-595	512.5	652.5	140.0	1.8	0.40
595-650	513.5	653.2	139.7	2.1	0.55
650-715	517.0	656.5	139.5	2.3	0.65
715-780	520.0	659.5	139.5	2.3	0.65

*Thousandths of an inch of alcohol.

Methyl alcohol wets the glass. The glass tube was thoroughly cleaned and did not come in contact with air or any other contaminating medium. The angle of contact of alcohol and glass would be zero at both extremities of the bubble. According to theory there would be no resistance due to the Jamin action, since there is no variation in the angle of wetting.

Figure 7 shows the relationship between the pressures applied at the two extremities of the alcohol bubble confined to the capillary tube and the velocity of displacement of the bubble. The author believes that much smaller pressures than 0.004 inch of alcohol could maintain the gas bubble in motion in a clean capillary tube of uniform size. The same bubble when forced through the capillary opening j required a differential pressure of 1.36 inches of alcohol.

The experiments seem to justify the statement that there is no Jamin effect when perfect wetting exists between the liquid and the solid. Similar results have been obtained by other investigators. J. Plateau, in repeating the Jamin experiments, proves that the cause of the resistance recorded in the case of water bubbles and glass tubes is only due to contamination. After cleaning the glass tube with concentrated potassium hydroxide, which was allowed to stay in the tube for 24 hours, the resistance opposed by the water bubbles was very small. After five minutes, a greater resistance was recorded, and after the tube was exposed to the atmosphere for 15 minutes before introducing the bubbles, the value of the resistance was similar to the one given by Jamin. At the Mellon Institute, W. O. Smith has caused artificial contamination of the tubes and shown that the resistance increases with the degree of contamination.

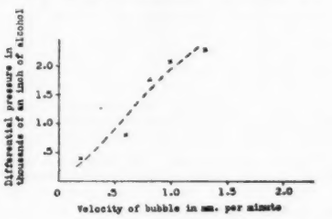


Figure 7—Relationship between pressures applied at extremities of alcohol bubble confined in capillary tube and velocity of displacement of bubble.

The magnitude of the angle of wetting is independent of the orientation of the solid surface. If the orientation of the solid surface changes, the surface of the liquid in the vicinity of the solid changes with it but the angle of contact will remain the same. If the angle is zero it will remain zero.

Experiments indicated that oil wets an uncontaminated glass or quartz surface and produces an angle of contact equal to zero; therefore in an oil sand there will be no phenomenon of hysteresis of the angle of contact and no Jamin effect. The phenomenon cannot be checked by direct measurements because it cannot be dissociated from the resistance caused by distortion of the gas bubbles when forced through the irregular openings of the sand pores. Furthermore, the magnitude of the resistance offered by gas bubbles is so much greater than any possible resistance caused by the Jamin effect that the presence of the latter would be unnoticeable.

Distortion of Gas Bubbles When Forced Through Capillary Openings

A small gas bubble, at rest, in a liquid medium, will take a spherical shape because the surface of the surrounding liquid tends to contract to the smallest area admissible. On the surface surrounding the gas bubble, or the gas-liquid interface, there is a greater concentration of gas molecules than within the rest of the bubble. These molecules are attracted or adsorbed because of the free energy of the liquid surface. The pressures exerted on the one side and the other of the interface are not equal. The pressure is less underneath a concave surface, and the following relationship exists:

$$p_1 = p_2 + \frac{2S}{r}$$

or the excess pressure on the inside of the bubble is equal to

$$p = \frac{2S}{r}$$

in which S is the surface tension of the liquid and r the radius of the bubble.

When two soap bubbles of unequal size are connected by a glass tube (Figure 8) it will be noticed that the smaller bubble blows out into the larger bubble. To prevent this and to maintain the two bubbles in equilibrium, it is necessary to apply a certain amount of pressure against the large bubble. In the case of a spherical soap bubble, there are two tensions to be considered, one on the inner side of the film and the other on the outer side; hence the excess pressure inside the bubble, due to the tension and curvature of the film, is $\frac{4S}{r}$. To avoid any unnecessary complications, let us assume that the fluid outside the bubble is a liquid and inside the bubble is a gas. There will be only one surface tension to be considered. If p_1 is the inside pressure (Figure 8), p_2 the outside pressure

Figure 8—Soap bubbles in equilibrium.

exerted upon the bubble A, and $p_2 + p$ the pressure exerted upon bubble B, in order to maintain the bubbles in equilibrium, the following equations must be satisfied:

$$p_1 = p_2 + \frac{2S}{r_1} \quad \text{and} \quad p_1 = p_2 + p + \frac{2S}{r_2}$$

Therefore

$$p = \frac{2S}{r_1} - \frac{2S}{r_2} = 2S\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$$

When a gas bubble is forced through a reduced opening, the same phenomenon is observed. The two spheres are replaced by the menisci A and B (Figure 9) and the connecting tube by the capillary opening pm, p'm'. Thus, the problem being similar to the previous case, the pressure to be applied against the large bubble will be

$$p = 2S\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$$

The equation can be derived by expressing the variation in pressure on each side of the two menisci, as previously done for the soap bubbles.

In a conical section, as the bubble A moves a small distance from m to n (Figure 9) bubble B will advance a greater distance from p to q because the volume between the spherical surfaces mm' and nn' has to be equal to the volume between the spherical surfaces pp' and qq'. As the bubble advances, r_1 will decrease much more rapidly than r_2, therefore, $\frac{1}{r_1}$ will increase more rapidly than $\frac{1}{r_2}$ and p will be at a maximum when r_1 is at a minimum, or equal to r, the radius of the capillary opening.

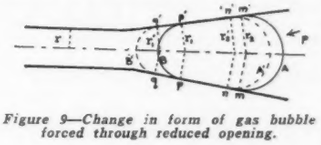


Figure 9—Change in form of gas bubble forced through reduced opening.

Before any pressure is applied against the surface A, the bubble is spherical. The effect of buoyancy on the distortion of the bubble is relatively small but becomes appreciable when the bubble is of about the same size as the capillary opening. As the pressure is increased against the surface A, the bubble takes a pear shape (Figure 10b), the neck of which is gradually lengthened as the pressure applied against the bubble is increased. The bubble will stay in this distorted position for an indefinite length of time or can be brought back to its original shape by removing the pressure. When the curvature of the upper meniscus is equal to r (Figure 10c) the whole bubble will shoot through the capillary tube independently of the size of the bubble.

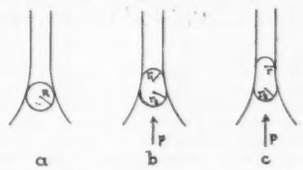


Figure 10—Change in form of gas bubble forced through reduced opening.

Considering the equation

$$p = 2S\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$$

p is at first zero when the bubble is spherical and $r_1 = r_2$. A small decrease of r_1 corresponds to a small decrease of r_2, but r_1 decreases more rapidly than r_2, therefore p must be increased as the difference between $\frac{1}{r_1}$ and $\frac{1}{r_2}$ becomes greater in order to maintain the bubble in a postion of equilibrium. Maximum is reached when r_1 is equal to r, which is the minimum value that r_1 can assume. Thereafter r_1 will remain constant, while r_2 will continue to decrease, and consequently p will also decrease until it reaches again the value zero when r_2 is equal to r_1 and both equal to r.

Other methods for computing the resistance offered by gas bubbles have been suggested. When the bubble changes its shape, the work performed by the bubble can be calculated by integrating the pressure times the distance traveled by each liquid particle within the limits of distortion. The work can also be derived from the variation of the free energy of the interface, which is equal to the increase in free surface of the bubble times the surface tension of the liquid. The latter method was used by Tickell. The computation by volume is very complicated and the variation of the free energy of the interface is not proportionate to the variation of p.

By forcing a bubble into a cylindrical capillary tube, the total surface of the bubble will be gradually increased until the whole bubble is confined to the capillary tube. The surface of the two menisci of the bubble decreases and becomes minimum when the total surface is at a maximum. The variation of p, as already described, is entirely different; therefore the maximum value of p cannot be calculated from the increase in the surface of the distorted bubble because the two quantities vary independently of each other.

Experiment 2

The same apparatus described for the experiments on the Jamin action was used for the experiments on distortion of gas bubbles.

A gas bubble was measured in capillary tube yz and driven into enlargement j against the vertical capillary opening. Stopcocks k and n were kept open and repeated readings were taken on the two micrometers to determine the position of equilibrium. Stopcock k was closed and the level a in reservoir 1 was raised by raising the leveling reservoir 3. Although the level in 2 changed only slightly, chiefly because of variations in temperature, readings were always made on both micrometers. Approximate determinations were made at first for alcohol, kerosene and water. Water proved to be unsatisfactory because the contamination of the liquid surface made the readings with the micrometer points unreliable. In the more accurate determinations methyl alcohol was used because it is easy to handle and has a surface tension of approximately the same value as oil.

Table 2 gives the size of the gas bubbles used. The radius of the spherical bubble R is computed from the volume measured in the horizontal capillary yz. The length of the bubble in the horizontal capillary is given in column 1. The

computation of r_2 is shown further in the paper.

Table 3 gives the observed and computed values of p calculated from the equation $p = 2S\left(\frac{1}{r_1} - \frac{1}{r_2}\right) r_1$. The radius of the capillary is equal to 0.011 cm. The surface tension of methyl alcohol was taken as 23. In the first column the differential pressure h of the two reservoirs is given in inches of alcohol. The same pressure is shown in column 2 in C.G.S. units, calculated from the equation

$$p = 2.54hdg$$

d and g being the density of methyl alcohol (0.792) and the acceleration of gravity (980).

The values given in Table 3 are shown in Figure 11. The observed value of bubble 7 was expected to be greater because of experimental inaccuracy. The observed value of bubble 3 is considered correct. The discrepancy arises from the fact that the value of p has been calculated from the equation $p = 2S\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$ on the assumption that p is maximum for the maximum value of r_2 corresponding to a minimum value of r_1 equal to 0.011 cm.

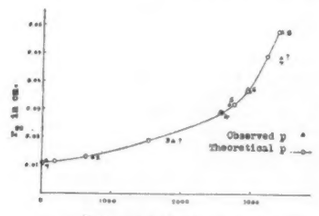


Figure 11—Relation of r_2 to observed and theoretical pressure.

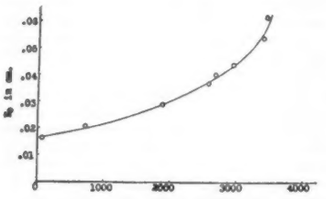


Figure 12—Relation of observed pressure to R_0.

It will be shown further that this assumption does not hold true for bubbles of all sizes on account of the irregularly shaped capillary opening.

Figure 13 shows the capillary tube

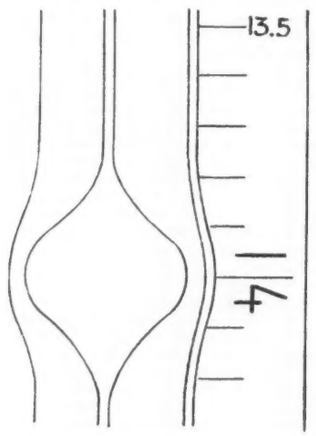


Figure 13—Capillary tube magnified 10 times.

magnified 10 times. The maximum pressure necessary to force the bubble into the capillary tube is reached after the upper meniscus is above 13.8 on the scale. The exact position could not be determined but lies between 13.7 and 13.6. The value of r_2 between these two points ranges from 0.012 to 0.011 cm. Experimental data show that the point at which the maximum pressure is reached is independent of the size of the bubble; that is, does not depend upon r_2. The magnitude of the maximum pressure of course, is, dependent upon r_2 as the experiments described in the previous section indicate.

The equation $p = 2S\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$ shows that p has its maximum value, independent of r_2 only when $\frac{1}{r_1}$ increases more rapidly than $\frac{1}{r_2}$, for r_1 minimum.

In the case of a conical section it can be proved easily that r_1 does decrease more rapidly than r_2. If the conical section terminates in a cylindrical tube of radius r, the maximum value of p is reached when r_1 is equal to r.

The portion of the enlargement j used is nearly a conical section, with a cylindrical tube and to a first approximation the position of the maximum pressure is reached when r_1 is equal to r, which was observed. For a bubble of volume 0.493 cu. mm. it was computed that upon forcing the bubble into the capillary, $\frac{1}{r_1}$ had the values 2.1, 7.1 and 8.3 corresponding to 2.1, 2.1 and 2.3 for $\frac{1}{r_2}$. This shows that $\frac{1}{r_2}$ varies little in comparison with $\frac{1}{r_1}$ in the capillary used. This is especially true of large bubbles and very small bubbles. However, when r_2 is small it is possible to have r_2 decrease more rapidly than r_1 and in that case the maximum of $\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$ will not take place when $\frac{1}{r_1}$ is maximum but when the whole parenthesis becomes maximum. The size of bubble No. 3 as already mentioned, probably corresponds to one of these critical conditions.

In Figure 12 the observed values of p maximum have been plotted against R, the radius of the original spherical bubble. R is easily calculated from the volume of the cylindrical bubble measured in the capillary tube yz. R is only slightly larger than r_2 for large bubbles especially when r, the capillary opening, is small. For small bubbles R is much larger than r_2 and cannot be used in the computations shown in Figure 11. For this reason the values of p computed against R, Figure 12, will differ from the theoretical curve shown in Figure 11. The curve shows a general relationship between the size of the bubble and the corresponding values of p.

Figure 14 illustrates the method by which r_2 was computed. The diagram shows a number of six bubbles of various sizes confined to the capillary tube and forced into the capillary enlargement j until the upper meniscus has reached the position marked 1. The volume of each distorted bubble was calculated and the value of R, the radius of the corresponding sphere was computed from that. The computations are given in Table 4.

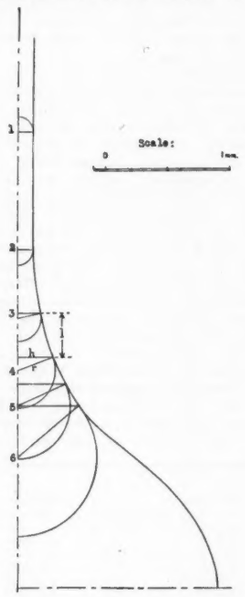


Figure 14—Longitudinal section through capillary and enlargement.

Figure 15 shows the values of R plotted against r_2.

The shape of the capillary shown in Figure 14 was obtained by measuring the distorted image of the capillary enlargement and by adjusting it according to volumetric measurements of the inner chamber.

TABLE 2—SIZE OF GAS BUBBLE

Bubble No.	Length, cm.	Volume, cu. cm.	R, cm.	r_2, cm.
1	0.05	0.000019	0.016	0.0115
2	0.11	0.000042	0.021	0.0130
3	0.27	0.000103	0.029	0.0190
4	0.55	0.000209	0.037	0.0290
5	0.70	0.000266	0.040	0.0323
6	0.96	0.000365	0.044	0.0372
7	1.70	0.000646	0.054	0.0490
8	2.65	0.001007	0.062	0.0578

TABLE 3—OBSERVED AND COMPUTED VALUES OF p

Bubble No.	Differential pressure, inches	Recorded pressure C.G.S.*	r_2	Computed value of p
1	0.038	75	0.0115	180
2	0.371	731	0.0130	640
3	0.955	1,882	0.019	1,540
4	1.310	2,582	0.029	2,590
5	1.362	2,684	0.032	2,760
6	1.494	2,945	0.037	2,950
7	†1.726	3,402	0.049	3,220
8	1.736	3,422	0.058	3,390

*To the figures in this column should be added the differential pressure due to buoyancy which is about 23 for bubble 1 and increases to about 54 for bubble 8. The greatest error is due to the difficulty encountered in computing r_2 to a required approximation of one-thousandth centimeter.

†The value of the observed pressure is greater than the corresponding maximum value of p. The bubble was moving more rapidly through the capillary than in the other experiments.

TABLE 4—COMPUTATION OF R

Number of bubble	r_2*	l*	h*	r*	Volume of sphere	Volume of cone	Total volume	R*
1	0.110	....	.....	0.11	2,787	.....	2,787	0.11
2	0.122	0.95	.....	0.122	3,859	40,162	46,808	0.223
3	0.180	0.50	0.156	0.175	14,643	35,008	92,600	0.281
4	0.295	0.35	0.195	0.280	80,060	57,920	215,937	0.372
5	0.422	0.22	0.242	0.390	251,991	78,261	466,129	0.481
6	0.650	0.18	0.250	0.500	1,039,050	110,664	1,363,852	0.688

*Given in millimeters. Volumes are 10^{-6} mm.^{3}.

Conclusions

The Jamin action is the resistance offered by detached gas and liquid bubbles confined to capillary tubes by a boundary condition which develops whenever the liquid does not wet the solid walls of the capillary. The resistance opposed by the bubble is proportionate to the variation of the solid-surface-tension at the two extremities of each individual liquid bubble and is inversely proportionate to the radius of the capillary tube. For oil and sand the Jamin effect is zero or very small. The resistance p offered by a gas bubble when forced into a capillary opening is given by the equation:

$$p = 2S\left|\frac{1}{r_1} - \frac{1}{r_2}\right|$$

in which S is the surface tension, r_1 the interporous opening through which the bubble is forced, and r_2 the maximum curvature of the distorted bubble, when the curvature at the other extremity of the bubble is r_1.

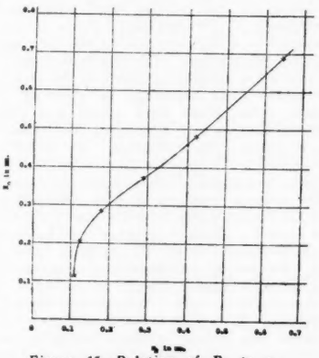


Figure 15—Relation of R_0 to r_2.

To be forced through a capillary opening of 0.011 centimeters diameter, a gas bubble, present in a liquid medium of surface tension equal to 23, will require a pressure of from zero to 4,000 dynes, depending on its size.

The magnitude of resistance offered by gas bubbles forced through small openings so far exceeds any possible resistance caused by the Jamin effect that the latter phenomenon need scarcely be considered in dealing with the movement of oil and gas through their natural reservoir locks.

COMBATING CORROSION OF OIL FIELD EQUIPMENT

(Continued from Page 39)

bearing crude oils are stored might well be made of aluminum sheets for the deck and side sheets of this aluminum test tank have not shown any signs of corrosion up to this time and apparently will last indefinitely.

Failure of the bottom is attributed to the presence of iron sulphide scale introduced into the tank through a mistake of an employe who inserted a gauging well made from 26 gauge sheet steel into this tank and as this thin metal very quickly corroded, the iron sulphide produced by the reaction fell to the bottom of the tank in pieces of appreciable size. The iron sulphide scale and the aluminum in contact in an electrolyte formed from the water in the bottom of the tank set up an electrochemical action that caused the aluminum to go into solution and in 18 months several holes were eaten through the bottom sheets.

The obvious method of overcoming this particular condition is to keep iron and steel parts out of contact with the aluminum equipment, and if this is done iron sulphide scale in appreciable quantities will not be introduced into the aluminum tank or other equipment.

The composite, or half steel and half aluminum tank did not handle hydrogen sulphide gas in any appreciable quantities. The oil that passed through it had previously been heated to a temperature of about 180° F. and in this way had lost much of its objectionable sulphur contents, so it is difficult to draw any direct comparison between these two test tanks, other than to say that the composite tank was apparently as good after 18 months use as when it was installed.

Field Laboratory

In May, 1929, the United States Bureau of Mines established a field laboratory at Borger, Tex., for the purpose

of observing the action of crude oil, water and hydrogen sulphide gas from wells in that area upon aluminum and steel tanks. The battery consists of one 500-bbl. all-aluminum receiving or treatment tank, two 250-bbl. all-aluminum tanks and two 250-bbl. all-steel pipe line tanks —five tanks in all.

The test will not be completed for some time but it is understood that salts in solution in the water entering the treating tank have dissolved aluminum pipe that was used in the form of a steam heating coil within the tank.

In the light of previous experiments with aluminum in contact with hot water carrying salts in solution these results could have been predicted, but this reaction should not reflect upon the work done in Crane County test.

Its equipment is required to handle oil or water containing salts in solution that make a mixture destructive to aluminum, the logical procedure is to neutralize or remove those salts before the liquid is introduced into the aluminum vessel.

Aluminum Foil

Aluminum foil has been used in several tests during the past year and Dr. Stanley Gill presented a paper before the American Petroleum Institute meeting in Chicago early in December on this subject. While this material seems to present many interesting possibilities, the principal problem to be solved in connection with its use is the preparation of adhesives that will hold it in place under varying conditions. Some types of cement or paste have been used with success, but the time element has been relatively short and the final results will not be known for some time.

Protective coatings to retard corrosion are still being recommended and many of them give good results under actual field conditions, but experience and detailed knowledge of the entire problem are required in the selection and application of such coatings.

Much has been learned along these definite lines in the past year and progress is being made by the process of elimination. The industry is coming to know what types of materials should not be used and in this way the field of vehicles and body elements for protective coatings is being narrowed down, with the result that proven materials are being used with much better success.

The metallurgist has been by no means inactive. In a lecture before the Conservatorie des Arts et Metiers in Paris, France, Albert Portevin stated that at least 4,000 investigations on corrosion had been made and reports published, not all in the past year, but all available for study at this time.

In his opinion if the choice of a non-corrosive substance were not influenced by cost then platinum offered an ideal solution. If mechanical properties could be ignored then glass and ceramic products solved most of the other problems connected with corrosion. If, on the other hand, the lowest priced material must be used, then cast iron would serve. If superior mechanical properties were essential, then ordinary steel conformed to most of the requirements.

Accelerates Corrosion

Heterogeneous structures in the metal encourages certain electrical action which accelerates corrosion. On the other hand, the surface layer formed by the corrosion itself retards further action and may even completely arrest the chemical attack on the metal. All industrial metals (except perhaps the precious metals) are chemically unstable in the presence of oxygen and acids, and their only chance of survival is offered by the protecting coat formed during early corrosion. The most interesting metals showing these phenomena are aluminum, nickel, cobalt and, in a less degrees, copper and steel. Metals in themselves rapidly attacked may become passive (i.e., have a protective oxide formed) if certain additions (chromium, silver, molybdenum, vanadium and tungsten) are added to them.

Chromium steels, termed stainless, constitute an immense advance in the pursuit of corrosion resisting alloys. In M. Portevin's opinion their introduction marks a veritable revolution in the use of metals, not only for current industrial requirements, but also for the needs of important chemical processes.

These steels fall into three categories: (1) Ferrites with very little carbon, which are malleable and are employed without heat treatment; (2) martensites, nonmalleable and used for hardening; and (3) austenites, solid solution alloys of iron, chromium, nickel and carbon, which after quenching are still malleable.

In all practical applications heterogeneity must be avoided. This principle would require the minimum number of alloys in a particular system, at least where they come in contact, and where such a joint is exposed to the corrosive conditions. Extreme care therefore must be taken in fabrication, welding, riveting or other methods of assembly which lead to inequalities of composition. Other important factors to be watched are the temperature and pressure of the corroding medium, its aeration, and the superficial condition of the metal used.

Reports of Specialists

Reports of specialists in many arts and industries are available for those who care to make use of them. Those who are interested in corrosion are being educated in the subject through open forums and a growing volume of literature. They are forewarned and hence forearmed.

With field men and operatives in refineries and other branches of the petroleum industry better trained to analyze conditions as they develop and to meet them if they become dangerous, there is less discussion of corrosion problems for the simple reason that there is a steadily diminishing necessity of enlisting the counsel of others. That is to say, conditions that used to be problems are no longer problems, leaving fewer things in this field to be talked or written about.

In the meantime a limited number of technical men continue their research work, upon the basis of which forward strides will be made.

By the time the next generation of workers are busy with their problems it will again be found that the solutions now offered will not fit. So the cycle of new investigations begun and completed keeps on.

And thus the world slowly advances and solves its puzzles. It may seem at this time that we no longer need intensive investigations, that we are fairly well instructed in what to do and what not to do under certain conditions that affect the corrosion of metals. Some of us will rest upon our laurels. Others will keep on tirelessly with their studies and their experiments. To them we must look for further progress.

TRANSCONTINENTAL-FUHRMAN

The Transcontinental Oil Co. has purchased the oil and gas holdings of the Fuhrman Oil Co. of Okmulgee, Okla. The production was scattered in Oklahoma and Kansas. One of the principal holdings is a half interest in the Cherry lease in Section 25-7-4, Pottawatomie County, in the St. Louis Pool. The consideration was $1,500,000 of which $1,000,000 was cash and the balance to be paid from the oil and gas produced from the properties.

GEORGE S. MITTEN DIES

CHATHAM, Ontario, Feb. 15.—George S. Mitten died recently at Sarnia, aged 66. He was at one time an operator in the Petrolia fields and an employe of the Standard Oil Co., and assisted in 1897 to lay the Sarnia-Petrolia pipe line, being since then connected with the Imperial Oil, Ltd., refinery at Sarnia.

WILL DRILL 39 WELLS

PITTSBURGH, Pa., Feb. 15.—The Pennsylvania-Bradford Co. announced here today that the Towne-Melvin Oil Co., one of the Pennsylvania-Bradford group, started drilling of 39 wells on its property in the heart of the Bradford oil field, in an extensive water flooding development to recover Bradford grade crude oil. The wells will be completed by the end of April, the announcement said.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 74)

Marine Oil Co.'s No. 1 Sawyer, C SW, Sec. 5, Blk. G, G.C.&S.F. Sur. ..... U.R. 6⅝-in. csg. 3,800 ft.

GRAY COUNTY

Adams Oil Co.'s No. 4 Morse, 330 ft. S and W, NE cor., Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ..... S.D. 2,495 ft; S.O.

Camel Oil Co.'s No. 2-B Harrah, 330 ft. N and E, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. ..... S.D. 950 ft.

Constantine et als' No. 1 Crews, 330 ft. S and W, NE cor. SW, Sec. 20, Blk. 30, H.&G.N.R.R. Sur. ..... S.G. 2,580-2,604 ft; drlg. 2,634 ft.

Danciger et als' No. 11 Jackson, 330 ft. S, 1,320 ft. W, NE cor. NW, Sec. 88, Blk. B-2, H.&G.N. Sur. ..... T.D. 2,906 ft.

Danciger O. & R. Co.'s No. 5 Morse, 330 ft. N and E, SW SW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ..... **S.D. 2,505 ft.**

Danciger O. & R. Co.'s No. 1 Shaw, 330 ft. S, 286 ft. E of E 39½ ac., NW, Sec. 5, Blk. 1, A.C.H.&B. Sur. .. **T.D. 2,589 ft.**

Danciger O. & R. Co.'s No. 2 Smith, 330 ft. S and E, SE, Blk. 3, I.&G.N.R.R. Sur. ..... T.D. 3,235 ft; 1,000 ft. oil in hole 3,183-88 ft; 1,800 ft. oil in hole 3,198-3,220 ft; swbd. 160 bbls. first 24 hrs.

Danciger O. & R. Co.'s No. 1 Williams, 330 ft. N, 330 ft. E, S½ NW ..... Estimated 15,000,000 ft. gas 2,610-70 ft; S.D. 2,720 ft.

Dixon Creek Oil Co.'s No. 1 Harrah, 330 ft. each way from NW cor. SE NE, Sec. 150, Blk. 3, I.&G.N. R.R. Sur. ..... Rigging up rotary.

Dunlop's No. 4 Morse, 330 ft. N and E, SW cor. SW, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ..... T.D. 2,431 ft.

Follet Pet. Corp.'s No. 1 Hood, 330 ft. S and W of W 80 ac., SW, Sec. 32, Blk. 3, H.&G.N.R.R. Sur. ..... Spudding.

Sines & Reiger's (formerly Eslick et als') No. 1 Mrs. J. A. Hopkins, NW cor. W 80 ac. of SW, Sec. 84, Blk. B-2, H.&T.C. Sur. ..... S.D. 3,735 ft.

Gardner Bros. and Collins' No. 2 Saunders, 955 ft. S, 330 ft. E of W 68 ac., E½, J. G. Eustice Sur. ..... Location.

Grallup et als' No. 1 Morse, 330 ft. each way NE cor. SE, Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ..... Drlg. 375 ft.

Gulf Prod. Co.'s No. 1 Barrett, 967 ft. N and E, SW cor. NE, Sec. 131, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,832 ft.

Gulf Prod. Co.'s No. 1 Bowers, 967 ft. N and E, SW cor. SE, Sec. 63, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 525 ft.

Gulf Prod. Co.'s No. 3 Worley-A, 330 ft. N, 1,650 ft. W, SE SW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 4,802 ft.

Haymer O. & G. Co.'s No. 1 Morse, 330 ft. each way out of SE cor. E½ SE, Sec. 45, Blk. A-9, H.&G. N. Sur. ..... S.D. 2,100 ft.

Herragan Oil Co.'s No. 1 Bradford, 330 ft. N, 990 ft. E, Sec. 123, Blk. B-2 ..... First S.G. 2,475-80 ft; 15,000,000 ft. gas 2,515-40 ft; S.O. 2,932-50 ft; S.D. 3,140 ft.

Humble O. & R. Co.'s No. 1 Combs-Worley, 330 ft. S and W, N½ SE, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 2,070 ft.

Lyon et als' No. 1-A Morse, 330 ft. S and W, NW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ..... Rig.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W cor. SE, Sec. 200, Blk. B-2, H.T.N. Sur. ..... Spudded and S.D.

Magnolia Pet. Co.'s No. 4 Harrah, 330 ft. each way, SW cor. NW, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. .... T.D. 710 ft.

Magnolia Pet. Co.'s No. 1 Cubine, 330 ft. N and W, NE, Sec. 36, Blk. 25, H.&G.N.R.R. Sur. ..... Rig on ground.

Magnolia Pet. Co.'s No. 5 Magnolia, 990 ft. N, 330 ft. E, SW cor., Sec. 14, Blk. 3, I.&G.N.R.R. Sur. ..... Rig on ground.

Magnolia Pet. Co.'s No. 4 Wright, 330 ft. N and W, SE cor. S½ SW, Sec. 13, Blk. 3, I.&G.N.R.R. Sur. .. Location.

McIlroy Oil Co.'s No. 1 Arnold, 330 ft. each way, NW cor. NW, Sec. 139, Blk. 3, I.&G.N.R.R. Sur. ..... Cmtd. 8¼-in. csg. 2,475 ft; drlg. 2,485 ft.

McMan O. & G. Co.'s No. 7 Palmer, 990 ft. S, 930 ft. W, NE cor. of E 100 ac. of W 200 ac., Sec. 31, Blk. B-2, H.&G.N.R.R. Sur. ..... Cmtng. 8¼-in. csg. 2,783 ft.

Mid-Continent Pet. Corp.'s No. 1 Laugham, 330 ft. S and W, W 231 ½ac. of N 310½ ac., Sec. 1, Blk. B-2, H.&G.N. Sur. ..... Location.

Operators Royalty Co.'s No. 1 Eddington, 330 ft. each way, NE cor. NW, Sec. 34, Blk. B-2, H.&G.N.R. R. Sur. ..... Drlg. 1,350 ft.

Oil Operators' No. 1 Bowers, 330 ft. N, 330 ft. E, Sec. 93, Blk. B-2, H.&G.N. Sur. ..... Show oil and gas 2,400-17 ft; S.O. 3,036-55 ft; first gas 2,483 ft; increase at 2,500 ft., 2,544 ft. and 2,950 ft; S.D. 3,090 ft.

Operators Oil Co.'s No. 5 Cook-Faulkner, 990 ft. N, 330 ft. W, SE, W 90 ac., Sec. 30, Blk. B-2, H.&G.N. Sur. S.D. 884 ft; spraying 5 bbls. oil per hr; T.P. 2,360 ft; S.D. 2,900 ft.

Phillips Pet. Co.'s No. 6 Jackson, 330 ft. N, 990 ft. E line, S½ NE, Sec. 88, Blk. B-2, H.&G.N.R.R. Sur. .. T.D. 3,030 ft.

Prairie O. & G. Co.'s No. 2 Langham, 330 ft. S and E, NW cor., W 230.3 ac., of S 310.5 ac. of Sec. 1, Blk. B-2, H.&G.N. Sur. ..... Location.

Rieger & Steckoll's No. 1 Bohr, 330 ft. S and E, Sec. 37, Blk. B-3, H.&G.N. Sur. ..... U.R. 6⅝-in. csg. 3,136 ft.

Robertson & Devore's No. 1 Saunders, 330 ft. S and W, E½ NW, Sec. 40, Blk. 3, H.&G.N.R.R. Sur. ..... 1,000 ft. oil 2,960-71 ft; T.D. 3,023 ft; preparing to test.

Shamrock O. & G. Co.'s No. 1 Taylor, 330 ft. each way out of NE cor. NW, Sec. 1, Blk. 2, H.&G.N. Sur. .... S.G. 2,245-85 ft; 1,000,000 ft. gas; 2,805-10 ft; drlg. 3,293 ft.

Smith & McDaniel's No. 1 Noble, 330 ft. N, 943 ft. E, SW NE, Sec. 49, Blk. A-9, H.&G.N.R.R. Sur. ..... S.D. 2,550 ft.

St. Clair Oil Co.'s No. 1 Dial, 330 ft. S and W, NE cor. SE, Sec. 10, Blk. 25, H.&G.N.R.R. Sur. ..... Spudded and S.D.

St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor., Sec. 35, W. R. Lee Sur. ..... Spudded and S.D.

Stover and Shell's No. 1 Saunders, 990 ft. N, 330 ft. E, of N 100 ac. of W 149 ac., Sec. 3, B.&B. Sur. ..... 4,000,000 ft. gas 2,258-2,370 ft; T. D. 2,518 ft.

Southern Expltn. Co.'s No. 1 Noel, 330 ft. S and W, W½ NW, Sec. 138, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,285 ft.

The Texas Co.'s No. 1 Bell, 2,310 ft. N, 2,640 ft. W, Sec. 133, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 1,550 ft.

The Texas Co.'s No. 8 Cook-Faulkner, 1,158 ft. N, 1,835 ft. W, SE cor., Sec. 29, Blk. B-2, H.&G.N.R.R. Sur... Sprayed 300 bbls. first 24 hrs; T.P. 2,675-78 ft. and 2,740 ft; flowing 345 bbls. per day; drlg. 2,857 ft.

The Texas Co.'s No. 6 Combs-Worley, 330 ft. S and E, NW cor. S½ SE, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. .. Drlg. 2,908 ft; 1,000,000 ft. gas 2,585-2,610 ft.

The Texas Co.'s No. 15 Saunders, 330 ft. N and W, SE cor. W½ SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. ..... S.D. 2,610 ft.

The Texas Co.'s No. 1 Wright, 330 ft. S and W, SE, Sec. 13, Blk. 3, I.&G.N.R.R. Sur. ..... Spudding.

Travis & Rieger's No. 1 Mackie, 330 ft. N and E, Sec. 114, Blk. B-2, H.&G.N.R.R. Sur. ..... 16,000,000 ft. gas; T.P. 2,685 ft; rig burned 3,343 ft.

Travis et als' No. 1-B Webb, 330 ft. N and W, Sec. 61, Blk. 25, H.&G.N.R.R. Sur. ..... T.D. 2,618 ft; T.P. 2,610 ft; 1,000 ft. oil in hole.

Tripplehorn Oil Co.'s No. 1 Morse, 330 ft. S and W, SW SE, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ..... S.D. 1,950 ft.

Vulcan O. & G. Co.'s No. 1 Carpenter, 330 ft. N and W of W 80 ac., NW, Sec. 25, Blk. 25, H.&G.N.R.R. Sur.. T.D. 1,520 ft; waiting on csg.

Wright Wilson, trustee's No. 1 Chapman, 175 ft. S and E lines, N½ NW, Sec. 69, Blk. 25, H.&G.N. Sur. .... S.O. 2,685 ft; S.D. 2,693 ft.
Wilcox-Pampa Oil Co.'s No. 10 Combs-Worley, 330 ft. S and W, NE cor. SW SW, Sec. 35, Blk. 3, I.&G. N.R.R. Sur. .... S.D. 2,820 ft; 32,000,000 ft. gas and 90 bbls. oil first 7 hrs; T.F. 2,811-13 ft.

HARTLEY COUNTY

Dana O. & G. Co.'s No. 1 Fritz, C NE, Sec. 81, Blk. 44, H.&T.C.R.R. Sur. .... Set 8-in. csg. 2,787 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood, 320 ft. N and W lines, League 7, Wilbarger County School lands; elevation 3,363 ft; contract depth 5,000 ft. .... Drlg. 5,020 ft.

HUTCHINSON COUNTY

Alamosa Oil Co.'s No. 4 Sanford, 310 ft. S, 320 ft. W, NE cor. N 160 ac., S 240 ac., Sec. 85, Blk. 46, H.& T.C. Sur. .... S.O. and wtr. 3,010-11 ft; S.D. 3,095 ft.
Alexander et als' No. 1 Johnson, 1,709 ft. E, 330 ft. N of N 80 ac. of E½ E. T. Tomlinson Sur. .... Drlg. 500 ft.
Barnsdall Oil Co.'s No. 4 Prichard "A," C SW NW, Sec. 3, Blk. 4, D.&S.E. Sur. .... Drlg. 1,390 ft.
Continental Oil Co.'s No. 1 Johnson-E, 330 ft. N and E, SW cor. SE, Sec. 5, Blk. I, B.&B. Sur. .... Rigging up.
Danciger O. & R. Co.'s No. 1 Cheatham, 330 ft. N and E SW SE, Sec. 38, Blk. Y, A.&B. Sur. .... Drlg. 150 ft.
Danciger O. & R. Co.'s No. 3 Moore, 330 ft. S and E, NW W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. .... 1,000 ft. oil in hole; T.P. 3,003-20 ft; S.D. 3,020 ft.
Danciger O. & G. Co.'s No. 4 Moore, 330 ft. N and E, SW cor. W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. .. Drlg. 2,695 ft.
Dixon Creek Oil Co.'s No. 1 Cheatham, 990 ft. E, 330 ft. S, N½ SE, Sec. 38, Blk. Y .... Drlg. 350 ft.
Dixon Creek Oil Co.'s No. 2 Cheatham, 330 ft. N, 1,650 ft. W, SE cor. N½ SE, Sec. 38, Blk. Y .... Location.
Dixon Creek Oil Co.'s No. 1 Johnson Bros., 50 ft. S, 330 ft. W, NE cor. E 80 ac., J. Gammon Sur. .... Drlg. 500 ft.
Gulf Prod. Co.'s No. 1 W. E. Herring, 1,320 ft. N, 1,-395 ft. E, SW cor., Sec. 5, Blk. J, H.&G.N. Sur. .... Drlg. 1,740 ft; shale.
Gulf Prod. Co.'s No. 1 Herring-A, 990 ft. S, 990 ft. W, NE cor., George Bazon Sur. .... Drlg. 1,174 ft.
Huey et als' No. 3 Smith et al, 330 ft. N, 660 ft. W, S 40 ac., of E 100 ac., SE, Sec. 12, Blk. Y .... S.D. 2,702 ft.
Midwest Explin. Co.'s No. 1-B Pitcher, 330 ft. E and S line, W½ SW, Sec. 19, T.C.R.R. Sur. .... Drlg. 315 ft.
Phillips Pet. Co.'s No. 2 Cheatham, 330 ft. S and E, NW cor. SE SE, Sec. 38, Blk. Y .... Spudding.
Phillips Pet. Co.'s No. 1 Johnson-Juanita, 330 ft. N and W, SE cor. W½, Sec. 5, Blk. I, B.&B. Sur. .... Bldg. rig.
Phillips Pet. Co.'s No. 1 Johnson-Trammel, 930 ft. N, 330 ft. W, SE cor. W½ NW, Sec. 38, Blk. Y .... Rigging up.
Phillips Pet. Co.'s No. 1 Johnson-Mayer, 990 ft. N and 990 ft. W line, NE, Sec. 37, Blk. Y, A.&B. Sur. .... Drlg. 270 ft.
Phillips Pet. Co.'s No. 1 Johnson-Rudy, 330 ft. W, 330 ft. S, SW SW, Sec. 30, Blk. Y, A.&B. Sur. .... Spudding.
Reliance O. & G. Co.'s No. 2 Sanford, 330 ft. S and E, NW W½ of N 80 ac. of S 320 ac., Sec. 83, Blk. 46, H.&T.C. Sur. .... Top lime pay 2,935-38 ft; I.P. 50 bbls; 10,000,000 ft. gas; S.D. 2,-938 ft.
Skelly Oil Co.'s No. 1 Byrd, 2,640 ft. E line, 3,960 ft. S line of W 3,094 ac., D. Luce Sur. .... Cmtng. 8-in. csg. 2,120 ft.
Spurlock et als' No. 1-A Christian, 440 ft. S, 300 ft. W, NE cor. SE SE, Sec. 33, Blk. Y .... Drlg. 320 ft.
The Texas Co.'s No. 4 J. L. Moore, 330 ft. S and W, NE cor. SW, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. .... T.P. 3,035-38 ft; swbd. 105 bbls; increase at 3,073-83 ft; I.P. 105 bbls; S.D. 3,095 ft.
The Texas Co.'s No. 5 Moore, 330 ft. N and W, SE cor. SW, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. .... Rigging up.
Texarado Oil Co.'s No. 2 Sanford, 330 ft. S, 990 ft. W, NE cor. N 80 ac., of S 160 ac., Sec. 83, Blk. 46, H. &T.C.R.R. Sur. .... Drlg. 550 ft.

LAMB COUNTY

Graham O. & G. Co. et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. .... S.D. 4,128 ft.

LIPSCOMB COUNTY

Brown et als' No. 1 Box T Ranch, SW NE, Sec. 612, H.&T.C. Sur. .... S.D. 3,750 ft.
Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. .... Fishing 4,954 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch .... Small S.O. 1,133-40 ft; S.D. 4,-167 ft.

MOORE COUNTY

Canadian River Gas Co.'s No. 1-C Sneed, 660 ft. N and E, SW, Sec. 46, Blk. 6-T. T.&N.O.R.R. Sur. .... Reblding. rig at 1,880 ft.
Fritch O. & G. Co.'s No. 1 Lee Bivins, C N 40 ac. of N 160 ac., Sec. 4, Geo. Mahan Sur. .... 2,000,000 ft. gas 1,550-65 ft; C.O. 3,090 ft; 6,000,000 ft. gas.
Gulf Prod. Co.'s No. 1 Kilgore, C SW, Sec. 22, Blk. P.Mc., E.L.R.R. Sur. .... Drlg. 1,680 ft.
Operators Royalty Co. et als' No. 1 Jones, 330 ft. S line, 330 ft. E line, SW SW, Sec. 164, Blk. 3-T, T.&N.O.R.R. Sur. .... Drlg. 2,505 ft.
Red River Gas Co.'s No. 1 J. M. Shelton, 330 ft. each way from SE cor., Sec. 52, Blk. 3, G.&M. Sur. .... Drlg. 2,475 ft.

MOTLEY COUNTY

Explin. Co.'s No. 6 Matador, 330 ft. N line, 330 ft. E line, Sec. 132, Blk. M .... S.D. 4,011 ft.
Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. .... S.D. 580 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1-N Masterson, 330 ft. E, 1,320 ft. S, Sec. 17, Blk. 3, G.&M.R.R. Sur. .... Cellar.

RANDALL COUNTY

W. A. Patterson's No. 1 Palo Duro, Sec. 60, Blk. K-14 .. S.D. 1,250 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. A-5 .... Shot 10 qts. 5,270-93 ft; S.O. 5,-288 ft; S.D. 5,992 ft; C.O.

WHEELER COUNTY

Burnett & Hosher's No. 1 Hosher, 330 ft. N and W, SW SE, Sec. 63, Blk. 17, H.&G.N.R.R. Sur .... S.G. 1,455 ft; drlg. 1,895 ft.
Dunaway Bros.' No. 1 Worley, 330 ft. S and W, NE cor. NW, Sec. 39, Blk. 24, H.&G.N.R.R. Sur. .... S.D. 815 ft.
Edwards et als' No. 1 Cates, C NW NE, Sec. 73, Blk. 23, H.&G.N. Sur. .... Drlg. 1,744 ft; 20,000,000 ft. gas 1,655-1,744 ft.
Lela O. & G. Co.'s No. 1 Williams & Laycock, 330 ft. S, 209 ft. W, W½ NW, Sec. 20, Blk. A-8, H.&G.N. Sur. .... 20,000,000 ft. gas 1,755-2,180 ft; T.D. 2,180 ft.
Lone Star Gas Co.'s No. 1 Brown, C NW NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. .... Location.
Lone Star Gas Co.'s No. 3 Linkey, 330 ft. S and W, NE cor., Sec. 106, Blk. 23, H.&G.N.R.R. Sur. .... Rig.
Lone Star Gas Co.'s No. 1 Ridinger, C NW NW, Sec. 65, Blk. 17, H.&G.N. Sur. .... Rig on ground.
Martin & Debous' No. 3 Close, C NW NE, Sec. 83, Blk. 23, H.&G.N.R.R. Sur. .... Drlg. 1,555 ft; S.G. 1,527 ft.
Murchison & Fain's No. 1-A Cooper, 380 ft. W, 330 ft. S, NW, Sec. 80, Blk. 23, H.&G.N.R.R. Sur. .... Junked and abd. 1,455 ft.
Wischkamper et als' No. 2 Brown, C SE NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. .... Machine set up.
Wischkamper et als' No. 2 Curry, C NW SE, Sec. 53, Blk. 23, H.&G.N. Sur. .... Set 8¼-in. csg. 1,670 ft; T.D. 1,-673 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 73)

CROCKETT COUNTY

Empire Gas & Fuel Co.'s No. 1 Shannon, 330 ft. from N and E of Sec. 42, T.C.R.R. Sur. .... Top salt 1,130 ft.; top lime 2,468 ft.; top pay 2,615 ft.; total depth 2,660 ft.; 1 bbl. oil per hour; shot 50 qts. from 2,615-30 ft.; bailing 25 bbls. oil and 8 bbls. water per day; setting 8¼-in. casing 2,468 ft.
Lewis & Daniels' No. 1 Pecos River bed, 19 yds. S and 37° E of NW cor., Sec. 33, Blk. 1, I.&G.N. Sur. .... Cleaning out 1,407 ft.
Magnolia Pet. Co.'s No. 1 Hoover, 2,310 ft. from N and 330 ft. from E of Sec. 12, Blk. 1, G.C.&S.F.R.R. Sur. .. Top salt 660 ft.; shut down 680 ft.

CULBERSON COUNTY

Grisham & Hunter Oil Corp.'s No. 1 Seay, 330 ft. from S and W of Sec. 16, Blk. 59, Twp. 7, T.&P.R.R. Sur. .. Drlg. 2,710 ft.
Hickey & Silver's No. 1 C. O. Finley, 660 ft. N and 1,980 ft. W, Sec. 20, Blk. 82 .... Small show oil 1,331 ft.; shut down 2,275 ft.; hole full water; elev. 3,874 ft.
West Coast Oil & Exploration Co.'s No. 1 McGregor, C NW, Sec. 14, Blk. 81 .... Slight show oil 740 ft.; shut down 875 ft.; may abandon.
Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E, Sec. 1, Blk. 97, Public School Land .... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; oil show 2,528 ft.; hole full sulphur water; running 6-in. casing; shut down 3,508 ft.

ECTOR COUNTY

Cosden Oil Co.'s No. 1-A University, 2,310 ft. from N. 440 ft. from E of Sec. 1, Blk. 35 .... Small show of gas 3,400-10 ft.; top pay 3,596 ft.; drlg. 3,760 ft.; pinched 100 bbls. daily.
Cosden Oil Co.'s No. 1 University-B, 1,650 ft. S and 440 ft. W of NE cor. Sec. 2, Blk. 35 .... No report.
C. P. Davis et al's No. 1 Hendricks, C SW Sec. 46, Blk. 42, Twp. 2s, T.&P.R.R. Sur. .... Spudding 20 ft.
Humble Oil & Ref. Co.'s No. 2 Kloh-Rumsey-D, 2,310 ft. S and 440 ft. E of NW cor. of Sec. 7, Blk. 44, Twp. 3s, T.&P. Sur. .... Rigging up.
Humble et al's No. 3 Kloh-D, 2,325 ft. N and 440 ft. E of SW cor. Sec. 7, Blk. 44, Twp. 3s .... Location.
Humble et al's No. 4 Kloh-D, 322 ft. N and 440 ft. E of SW cor. Sec. 7, Blk. 44, Twp. 3s .... Location.
Humble Oil & Ref. Co.'s No. 2 York, 990 ft. S and 440 ft. E of NW cor. of Sec. 16, Blk. 44, Twp. 3s, T.&P. Sur. .... Drlg. 520 ft. red rock.
Humble Oil & Ref. Co.'s No. 3 York, 1,650 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s, T.&P. Sur. .. Spudding 150 ft.
Humble et al's No. 4 York, 325 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s .... Location.
Humble et al's No. 5 York, 2,334 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s .... Location.
Humble et al's No. 6 York, 2,991 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s .... Location.
H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk. 46, Twp. 3s, G.M.M.Br.&A. Sur. .... Moving in material.
Landreth Prod. Corp.'s No. 1-A University, T NE Sec. 3, Blk. 35, 110 ft. E of No. 1-T .... Spudding.
Landreth Prod. Corp.'s No. 2-T University, 990 ft. from N and 330 ft. from E of Sec. 3, Blk. 35 .... Drlg. 820 ft.
Llano Oil Co.'s No. 1 Midland, 330 ft. N and W of Sec. 18, Blk. 44, Twp. 3s, T.&P.R.R. Sur. .... Drlg. 2,860 ft. in anhyrite.
R. R. Penn et al's No. 1 Goodman et al, 2,640 ft. N and 330 ft. W of SE cor. Sec. 27, Blk. 44, T.&P.R.R. Sur. .. Location.

EL PASO COUNTY

Laytex's No. 1 Malone, 2,200 ft. SW and NW, Sec. 46, J. M. Day Sur. .... Shut down 1,481 ft.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlow, Sec. 60, V-8, J. C. Clift Sur. .... Shut down 3,000 ft.

FISHER COUNTY

Cranfill & Reynolds' No. 1 Johnson, 440 ft. from N and 1,540 ft. from W of Sec. 3, Blk. R. Richardson Sur. .. Drlg. 515 ft.
Magnolia Pet. Co.'s No. 1 Lee, Sec. 357, 2,310 ft. from N and 4,286 ft. from W .... Drlg. 4,925 ft.
Mid-Kansas' No. 1 Stephens, Sec. 26, 1,800 ft. from N, 330 ft. E, El Paso County School Land .... Shut down 4,005 ft.

GAINES COUNTY

Louisiana Oil & Ref. Co.'s No. 1 Ralph, 1,320 ft. from S and W of Sec. 7, Blk. A-28, Public School Land .... Drlg. 4,460 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 6, H.&G.N. Sur. .... Location.
Pandem Oil Corp.'s No. 1 Stokes, 2,310 ft. N and E of SW. Sec. 32, Blk. 5, G.H.&H.R.R. Sur. .... Total depth 3,018 ft.; show oil 2,908-18 ft.; plugged back to 2,938 ft.; cleaning out and plugging back to shut off water after 90-qt. shot from 2,908-28 ft.; 200 ft. oil and 1,700 ft. water in hole.

GLASSCOCK COUNTY

Amerada Pet. Corp.'s No. 2 Coffee, 1,650 ft. S and 2,310 ft. E of NW cor. Sec. 22, Blk. 33, Twp. 2s, T.&P. R.R. Sur. .... Drlg. 1,772 ft.
California Co.'s No. 3 Curle, 990 ft. S and 2,310 ft. W of NE cor., Sec. 219, Blk. 29, W.&N.W.R.R. Sur. .. Showing oil from 3,022-31 ft.; total depth 3,671 ft.; plugged back to 3,536 ft.; cemented 6⅝-in. casing 3,426 ft.
California Co.'s No. 1 Jones, 330 ft. S from N and E lines, Sec. 25, Blk. 33, Twp. 2s, T.&P. Sur. .... Derrick.
Timberlake & Snyder's No. 1 Meek, 2,310 ft. W and 1,600 ft. N of SE cor., Sec. 7, Blk. 34, Twp. 3s, T.&P. Sur. .. Show oil 970 ft.; shut down 1,580 ft.
F. H. E. Oil Co.'s No. 1 Cox, 330 ft. from S and E of SW Sec. 8, Blk. 33, Twp. 2s, T.&P. Sur. .... Derrick.
Simms Oil Co.'s No. 2 Coffee, Sec. 22, Blk. 33, Twp. 2s, 1,650 ft. from N, 330 ft. E .... Top pay 2,175 ft.; 500 ft. oil in hole; total depth 2,269 ft.; will drill deeper.
Simms Oil Co.'s No. 3 Coffee, 990 ft. from N and 330 ft. from W of E half Sec. 22, Blk. 33, Twp. 2s .... Drlg. 1,715 ft.
World Oil Co.'s No. 2-C McDowell, Sec. 21, Blk. 34, Twp. 2s, 330 ft. S and 2,310 ft. E of NW cor. .... Oil from 2,435-42 ft.; total depth 2,453 ft.; now pumping 5 bbls. oil and 12 bbls. water.

HOWARD COUNTY

American Maracaibo Co.'s No. 4-A Settle, 1,040 ft. S and 330 ft. E of NW cor. Sec. 6, Blk. 32, Twp. 2s, T.&P.S. Sur. .... Drlg. 510 ft.
California Co.'s No. 11 Roberts, Lease 2, 990 ft. N and 2,188 ft. W of SE cor. Sec. 137, Blk. 29, W.&N.W. R.R. Sur. .... Waiting on cement to set 1,726 ft.
Cosden Oil Co.'s No. 6 Roberts-A, 200 ft. N and E of SW cor. Sec. 129, Blk. 29, W.&N.W.R.R. Sur. .... Shut down 1,456 ft.; sulphur water 1,433-46 ft.
Continental Oil Co.'s No. 7-C Chalk, 1,990 ft. S and 2,440 ft. W of NE cor. Sec. 140, Blk. 29, W.&N.W. R.R. Sur. .... Drlg. 739 ft.

Empire Gas & Fuel Co.'s No. 4 Clay, 330 ft. N and 2,310 ft. W of SE cor. Sec. 127, Blk. 29, W.&N.W.R.R. Sur. ..... Waiting on cement to set 1,415 ft.

Group No. 1 and Continental Oil Co.'s No. 2 Overton, 1,650 ft. from N and 2,310 ft. from E line of Sec. 5, Blk. 32, Twp. 2s, T.&P.R.R. Sur. ..... Drlg. 2,176 ft.; top pay 2,174 ft.; 200 ft oil in hole.

Group No. 1 and Continental Oil Co.'s No. 3 Overton, 990 ft. from N and 330 ft. from E line of Sec. 5, Blk. 32, Twp. 2s, T.&P.R.R. Sur. ..... Standardizing 2,055 ft.

McGinley-Sigler's No. 1 Hyman-B, 330 ft. S and W of NE cor. SW Sec. 89, Blk. 29, W.&N.W. Sur. ..... Drlg. 1,300 ft. in red sand; 500,000 ft. sweet gas 1,241-50 ft.

McGinley-Sigler's No. 1 Hyman-C, 330 ft. N and 990 ft. W SE cor. SE Sec. 93, Blk 29, W.&N.W.R.R. Sur. .... Location.

Merriwether's No. 1 Smith, 150 ft. from S, 2,490 ft. from W, Sec. 45, Blk. 33 ..... Shut down 2,275 ft.

Moody Oil Corp.'s No. 23-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ..... Set 10-in. casing; shut down 261 ft.

Plymouth Oil Co.'s No. 4 Abrams, 330 ft. from N and 1,650 ft. from W, Sec. 5, Blk. 32, Twp. 2s ..... Top pay 2,480 ft.; total depth 2,519 ft.; plugged back 2,505 ft.; pumped 20 bbls., 15 per cent water, in 24 hrs.; may shoot.

Simms Oil Co.'s No. 2 Clay, 330 ft. from S, 2,310 ft. from W, Sec. 127, Blk. 29 ..... Oil show 1,570-80 ft.; drlg. 2,800 ft.

Ward Oil Co.'s No. 21 Roberts, 2,310 ft. N and 990 ft. E of SW cor. of Sec. 137, Blk. 29, W.&N.W.R.R. Sur. .... Top pay 2,528 ft.; total depth 2,575 ft.; shot 200 qts. 2,520-75 ft.; 600 ft. oil in hole.; shot 200 qts. 1,835-65 ft.; cleaning out.

HUDSPETH COUNTY

California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor., Sec. 19, Blk. E ..... Drlg. 3,541 ft.

Western States Oil Co.'s No. 1 Moore, C SE, Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ..... Shut down 2,760 ft.

Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW, Sec. 12, Blk. 18 ..... Fishing 3,155 ft.

IRION COUNTY

Beesley's No. 1 Sawyer Cattle Co., 1,320 ft. N and E of SW cor., Sec. 3,032, Blk. 24, H.&T.C.R.R. Sur. ..... Set 6-in. casing 1,675 ft.; drlg. 1,750 ft.

Crawford Oil Co.'s No. 1 Williams, 450 ft. from N, 150 ft. from W, Subd. 8 ..... Shut down 1,105 ft.

Cromwell et al's No. 1 Fuller, 2,134 ft. N and 631 ft. W of SE cor., Sec. 81, Blk. 1, H.&T.C.R.R. Sur. ..... Drlg. 1,300 ft.; 3 bbls. sulphur water 1,040-50 ft.

Kingwood Oil Co. et al's No. 1 J. D. Suggs, SE NW SE, Sec. 19, Blk. 7, H.&T.C. Sur. ..... Show gas 7,656 ft.; set 4½-in. casing 7,550 ft.; encountered 2,400 ft. sulphur water at 7,818 ft.; plugged back with lead wool to 7,718 ft.; plugged back with cement to 7,668 ft.; shot 20 qts. 7,645-68 ft.; no results.

J. A. Starkweather's No. 1 Lindley, Sec. 1,160½, 900 ft. from S, 150 ft. from E, H.&T.C. Sur. on E ..... Drlg. 1,945 ft.

P. H. Williams' No. 1 Ash, C of Sec. 20, Washington County ..... Drlg. 1,800 ft.

JONES COUNTY

Continental Oil Co.'s No. 1 Phillips, 440 ft. from S and 330 ft. from E of Phillips 80-ac. tract, Sec. 16, Blk. 19, T.&P. Sur. ..... Shut down 2,923 ft.

Cosden-Herbert et al's No. 3 Bickley, 330 ft. N and W of SE cor. of S half NW, Sec. 50, Blk. 18 ..... Rig.

Mid-Tex Oil & Gas Co.'s No. 1 King ..... Shut down 1,590 ft.

Shabeen et al's No. 1 King ..... 800 ft. fluid in hole; shut down 2,204 ft.; top pay 2,061 ft.; cleaning out after shot.

W. S. Ware's No. 2 Newman, 150 ft. from N and 2,090 ft. from E of Sec. 52, Blk. 18, T.&P.R.R. Sur. ..... Fishing 2,330 ft.

KENT COUNTY

California and Atlantic's No. 1 Wallace, 330 ft. from S and W, Sec. 60, Blk. G, W.&N.W.R.R. Sur. ..... Drlg. 2,425 ft.

White & Smith's No. 1 Pursley estate, 1,320 ft. from E and 2,640 ft. from S of Sec. 8, Blk. H. H.&T.B. Sur. .. Shut down 273 ft.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 700 ft. from N and W line of F. Lotta Sur. ..... Shut down 800 ft.

McLean & Jamison's No. 1 Cannon, 1,940 ft. N and 300 ft. W of SE cor. Robert Cochran Sur. ..... Fishing 1,650 ft.

LOVING COUNTY

California Co.'s No. 1 Allen, 330 ft. from SE and SW of Sec. 90, Blk. 1, W.&N.W. Sur. ..... Drlg. water well.

California Co.'s No. 1 Reagan & McElvain, 330 ft. SW of NE line and 330 ft. SE of NW line, Sec. 84, Blk. 1, W.&N.W.R.R. Sur. ..... Location.

Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Cellar.

California Co.'s No. 1 Reagan et al, 330 ft. from NE and NW, Sec. 84, Blk. 1, W.&N.W. Sur. ..... Moving in material.

Humble Oil & Ref. Co.'s No. 1 Kloh, 2,640 ft. N and W, Sec. 35, Blk. 55, Twp. 2, T.&P.R.R. Sur. ..... Last salt 3,760 ft.; drlg. 3,770 ft.

Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. SW of NE line and 330 ft. NW of SE Sec. 92, Blk. 1, W.&N.W.R.R. Sur. ..... Location.

Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W, Sec. 91, Blk. 1, W.&N.W. Sur. ..... Spudded 140 ft.; shut down.

Lockhart & Co.'s No. 3 Hubbard, 1,650 ft. from NE line, 330 ft. NW line of Sec. 83, Blk. 33, H.&T.C.R.R. Sur. .. Location.

Lockhart & Co.'s No. 5 Hubbard, 1,650 ft. SW of NE line and 330 ft. SE of NW line Sec. 83, Blk. 33, H.&T.C. ..... Shut down 2,375 ft.; repairing engine.

LYNN COUNTY

Lubewell Oil Co.'s No. 1 May, 2,310 ft. S, 2,310 ft. W, Sec. 10, Blk. 7, E.L.R.R. Sur. ..... Shut down 190 ft. for casing.

George McCamey's No. 1 Edwards, 165 ft. N and E, Sec. 5, Blk. 2, L.S.&W. Sur. ..... Top salt 2,140 ft.; oil show 1,580-90 ft.; hole full sulphur water 4,730 ft.; set 6-in. casing 4,733 ft.; shut down 5,040 ft.

MENARD COUNTY

Conklin & Duffey's No. 1 J. P. Sorrell, 550 ft. W and 250 ft. N of SE cor. Sec. 132, E.L.R.R. Sur. ..... Spudded 100 ft.

Cromwell & Duffey's No. 2 Winslow, 250 ft. S and E of NW cor. NE of NE, Sec. 36, J. H. Gibson Sur. ..... Will run 12-in. pipe 1,025 ft.

I. C. Barnett's No. 2 Callan, Sec. 1, 1,050 ft. from S, 1,190 ft. W ..... 2½ bbls. water hourly, 1,100,000 ft. gas, 1,268 ft.

MITCHELL COUNTY

Magnolia Petroleum Co.'s No. 7 Mary Foster, 330 ft. from N and W line of Sec. 17, Blk. 29, Twp. 1s, T.&P.R.R. Sur. ..... Drlg. 800 ft.

Morrison et al's No. 2 Morrison, 2,390 ft. from N and 660 ft. from E of Sec. 31, Blk. 28, Twp. 1n, T.&P. R.R. Sur. ..... Standard rig.

Seiger's No. 1 Scott, C of NE of SW, Sec. 36, Blk. 17, S.P.R.R. Sur. ..... Shut down 730 ft.

Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ..... Cleaning out 4,820 ft.

NOLAN COUNTY

Gibson & Johnson's No. 1 Bond, 1,320 ft. from N and 1,980 ft. from E of Sec. 42, Blk. 20, T.&P. Sur. ..... Shut down 3,240 ft.

PECOS COUNTY

Amerada Pet. Corp.'s No. 1-B University, 1,650 ft. from W and 990 ft. from S, Sec. 32, Blk. 16 ..... Drlg. 350 ft.

Atlantic G. P. Co.'s No. 1 Shearer, 330 ft. from NW and SW Sec. 107, Blk. 10, E.Y.N.R.R. Sur. ..... Drlg. 235 ft.

Black & Dittman's No. 1 Pecos Valley, 160 ft. from SW and SE lines, Sec. 34, Blk. 3, H.&T.C.R.R. Sur. ..... Shut down 1,250 ft.

Cardinal Oil Co.'s No. 6 Torborg, 450 ft. N and 150 ft. W of SE cor. W half Sec. 539, Arnold & Barrett Sur. A-3 ..... Location.

Continental Oil Co.'s No. 6 University, 330 ft. S and 3,031 ft. E of NW cor. of Sec. 6, Blk. 17, University Land ..... Cellar.

E. W. Bateman et al's No. 1 Cordova, 3,490 ft. from N and 1,515 ft. from W, Sec. 29, Blk. 11, H.&G.N.R.R. Sur. ..... Shut down 1,826 ft.

Cosden Oil Co.'s No. 1 McDonald, 350 ft. from N and E of Sec. 1, H.E.&W.T. Sur. ..... Flowing water 1,645 ft.; shut down 2,016 ft.

Cowboy Evans' No. 1 Pecos Valley, 1,307 ft. from SE line, 907 ft. from SW line to Sec. 36, Blk. 3, H.&T.C.R.R. Sur. ..... Location.

Dixie Oil Co.'s No. 1 McKinzie, 3,300 ft. from N and 2,025 ft. from W of Sec. 15, Blk. 604, G.C.&S.F. ..... Shut down 1,122 ft.; to lower 10-in. casing.

Dixie Oil Co.'s No. 1 Toborg, 150 ft. from SW line of E half of Sec. 539, Arnold & Barrett Sur. ..... Drlg. 400 ft.

A. M. Griffith's No. 1 Ferrenbach et al, 2,112 ft. from W line, 1,320 ft. from S line, Sec. 9, Blk. 603, G.C.&S.F. Sur. ..... Shut down 1,860 ft.

Geyer-Frates' No. 1 White-Baker, 2,310 ft. from N and E line of Sec. 29, Blk. Z, T.C.R.R. Sur. ..... Drlg. 1,976 ft.

Humble Oil & Ref. Co.'s No. 2 Cunningham, 2,640 ft. from N, 330 ft. from W line of Sec. 48, Blk. 11, H.&G.N.R.R. Sur. ..... Drlg. 975 ft.

Hussman Oil Co.'s No. 1 Esters, 960 ft. from N and 300 ft. E, Sec. 83, Blk. OW, T.M.R.R. Sur. ..... Drlg. 785 ft.

J. L. Kennedy's No. 1 Roberts, C of Sec. 78, Blk. 3, T.&P.R.R. Sur. ..... Drlg. 2,880 ft.

Landreth Prod. and Henshaw Bros.' No. 1-E University, 330 ft. N and W of SE cor. W half NE, Sec. 13, Blk. 18, University Land ..... Fishing for tools 950 ft.

Landreth Prod. and Henshaw Bros.' No. 2-I University, 330 ft. S and W of NE, Sec. 24, Blk. 18, University Land ..... Cellar.

Martin A. Meyer et al's (formerly Mauch & Kroger) No. 1 Holmes, S half SW Sec. 5, Blk. 178, T.C. Sur. ..... Shut down 1,735 ft.

R. E. Moore's No. 1 Arnold, 1,320 ft. from S and 660 ft. from E lines of Sec. 18, Blk. 1, H.&T.C.R.R. Sur. .... Show oil 1,216 ft.; show oil 1,402 ft.; pulling 8-in. casing; shut down 1,615 ft.

Mid-Kansas Oil & Gas Co.'s No. 8 M. A. Smith, 250 ft. N and 1,005 ft. W of NE cor., Sec. 21, Blk. 194, G.C.&S.F. Sur. ..... Total depth 1,492 ft.; preparing to run 8¼-in. casing.

J. D. O'Mara's No. 1 Bennett, Sec. 592, 1,460 ft. from S, 150 ft. from E, G.C.&S.F. Sur. ..... Fishing 875 ft.

J. D. O'Mara's No. 1 Streety, C of Sec. 1, W. P. Howard Sur. ..... Shut down 1,712 ft.

Pecos Crude Oil Pur. Co.'s No. 4 Pecos Valley, 770 ft. from SW and 1,320 ft. from SE of W, Sec. 22, Blk. 10, H.&G.N.R.R. Sur. ..... Top salt 985 ft.; top pay 1,622 ft.; oil rose in hole 250 ft. per hour at total depth 1,649 ft.

Peren Oil Co.'s No. 2 Eaton, C of E of W, Sec. 27, Blk. 3, H.&T.C.R.R. Sur. ..... Location.

M. M. Rowan's No. 1 University, NE, Sec. 25, Blk. 16 ... Total depth 2,490 ft.; plugged back 1,815 ft.; machine moved off.

Phillips Pet. Co.'s No. 3 Monroe, 3,860 ft. from N and 660 ft. from E Sec. 39, Blk. 194, G.C.&S.F. ..... Cellar.

Phillips Pet. Co.'s No. 5 Ramsey, 330 ft. from N and 1,650 ft. from W of Sec. 17, Blk. 194 ..... Fishing 355 ft.

Southern Crude Oil Pur. Co.'s No. 1 McKenzie, Sec. 10, Blk. 604 ..... Hole full sulphur water 775 ft.; total depth 965 ft.; running 10-in. casing.

Shell Pet. Corp.'s No. 1 Percival, 330 ft. from N and E of SE, Sec. 199, Blk. 3, I.&G.N. Sur. ..... Location.

Shell Pet. Corp.'s No. 1-D University, 1,650 ft. from E and 990 ft. from W of Sec. 32, Blk. 16 ..... Drlg. 400 ft.

Shell Pet. Corp.'s No. 2-B Smith, 1,006 ft. S and 320 ft. W of NE cor. Sec. 24, Blk. 194, G.C.&S.F.R.R. Sur. ..... Location.

Shell Pet. Corp.'s No. 5 Smith-D, 990 ft. N and W of SE cor. of Sec. 24, Blk. 194, G.C.&S.F.R.R. Sur. ..... Drlg. 425 ft.

Sides & Cloyd's No. 2 Blackstone & Slaughter, C NW of Sec. 34, Blk. A-2, T.&C.R.R. Sur. ..... Running 10-in. casing 530 ft.

Simms Pet. Co.'s No. 1 University, 1,650 ft. N and 330 ft. W of SE cor. Sec. 21, Blk. 19, University Land ... Underreaming; total depth 415 ft.

Skelly Oil Co.'s No. 1 Bowers, SW cor. N half SE, Sec. 31, Blk. 16 ..... Initial production 58 bbls. 1,649-50 ft.; swabbed 45 bbls. day; total depth 1,676 ft.; plugged back to 1,670 ft.; to clean out and pump.

Transcontinental Oil Co.'s No. 1 University ..... Drlg. 4,874 ft.

Transcontinental and Arkansas' No. 2 Matthews, 1,060 ft. from E and 330 ft. from N line of SE Sec. 10, Blk. 194, G.C.&S.F.R.R. Sur. ..... Location.

Transcontinental and Arkansas Fuel Oil Co.'s No. 1-A Smith, 2,310 ft. from N and 1,290 ft. from E of Sec. 11, Blk. 194, G.C.&S.F. Sur. ..... Location.

Transcontinental Oil Co. et al's No. 2 Sellman, 990 ft. from N and 2,310 ft. from E of Sec. 8, Blk. Z, T.C. Sur. ..... Location.

Transcontinental Oil Co.'s No. 1 Smith, 2,310 ft. from N and 1,060 ft. from E of Sec. 10, Blk. 194, G.C.&S.F. R.R. Sur. ..... Location.

Trees Oil Co.'s No. 3 Trees, 330 ft. from S and W of Sec. 90, Blk. 8, H.&G.N. Sur. ..... Drlg. 1,380 ft.

World Oil Co.'s No. 2 University, Sec. 31, Blk. 16, 330 ft. from N, 2,310 ft. E ..... Total depth 1,659 ft.; show oil 1,642-45 ft.; water 1,654 ft.; to plug back to 1,620 ft. and test; 1,400 ft. sulphur water in hole 1,659 ft.

World Oil Co.'s No. 1-C University, 1,650 ft. from N, 990 ft. W, Sec. 7, Blk. 20, University Land ..... Flowing water 1,563-65 ft.; set 10-in. casing at 753 ft.

PRESIDIO COUNTY

Eastland Oil Co.'s No. 1 Tootle, C Sec. 17, Blk. 1, D.P. R.R. Sur. ..... Spudded; shut down.

REAGAN COUNTY

Big Lake Oil Co.'s No. 1-C University, 2,598 ft. S and 250 ft. W of NE cor., Sec. 1, Blk. 2, University Land.. Top pay 2,903 ft.; 1,000 ft. fluid in hole; top pay 6,807 ft.; drlg. 8,382 ft.

Big Lake Oil Co.'s No. 4-C University, 1,120 ft. from N and 1,096 ft. from E of Sec. 1, Blk. 2 ..... Showing oil and gas at 8,220 ft.; total depth 8,220 ft.; flowed an average 176 bbls. daily; set 5 3-16-in. casing 7,837 ft.

Texon Oil & Land Co.'s No. 2-B University, 4,655 ft. from S, 250 ft. from W, Sec. 36, Blk. 9 ..... Drlg. 5,106 ft.

Texon Oil & Land Co.'s No. 3-B University, 2,240 ft. from S, 920 ft. from W, Sec. 36, Blk. 9 ..... Drlg. by pipe 2,890 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Shut down 2,990 ft.

H. T. Hansford's No. 1 Williams, 150 ft. from S and W, Sec. 17, Blk. 6, H.&G.N. Sur. ..... Shut down 380 ft.

Black & Fink's No. 1 Brooks, 1,980 ft. N and 660 ft. W, Sec. 16, Blk. 59 ..... Drlg. 965 ft.
Southern Crude Oil Pur. Co.'s No. 1 Kloh-Rumsey, 2,310 ft. N and W SE cor., Sec. 23, Blk. 51 ..... Show oil 3,410-20 ft.; shut down 3,575 ft.
David R. Thompson's No. 1 A. A. Eddins, Sec. 9, Blk. C-1 ..... Fishing 5,658 ft.

RUNNELS COUNTY

Gibson & Johnson's No. 1 Johnson, 2,310 ft. N and 1,650 ft. W of SE cor., Sec. 150, E.T.R.R. Sur. ..... Spudding.
Gibson & Johnson's No. 2 Serratt, 2,310 ft. from S and 1,650 ft. from E of Sec. 150, E.T.R.R. Sur. ..... Derrick.
George W. Boyce's No. 1 Lang, 2,310 ft. N, 6,900 ft. E, Sec. 262 ..... Underreaming 10-in. casing 1,700-40 ft.
McLean's No. 1 Clayton, 150 ft. from N line, 270 ft. from W line of Sec. 133 ..... Shut down 1,185 ft.

SCHLEICHER COUNTY

Delmar Oil Co.'s No. 1 O'Harrow, C of NW, Sec. 56, Blk. 1, G.H.&S.A.R.R. Sur. ..... Drlg. 2,215 ft. in gray lime.
Interstate's No. 1 Whitten, 1,320 ft. from N and W, Sec. 36, Blk. LL, T.C.R.R. Sur. ..... Cementing cave 5,910 ft.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,470 ft. from W, G.H.&S.A.R.R. Sur. ..... Shut down 2,140 ft.; fishing.

SCURRY COUNTY

Byrd & Harmon's No. 1 Murphy, Jr., 330 ft. from N and E of Sec. 114, Blk. 97, H.&T.C. Sur. ..... Shut down 1,732 ft.
Camp Spring Oil & Ref. Co.'s No. 3 Guinn, 1,300 ft. from S, 300 ft. from E, Sec. 12, Blk. 3, H.&T.C.R.R. Sur. ..... Fishing 3,805 ft.; est. 200,000 ft. gas at 3,775 ft.
I. B. Mimms et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C.R.R. Sur. ..... Spudded and shut down 300 ft.
G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ..... Shut down 4,325 ft.
E. L. Smith Oil Co.'s No. 1 Moore, 1,320 ft. from S and W, Sec. 379, Blk. 97 ..... Top salt 750 ft.; encountered 500,000 ft. gas 1,510 ft.; oil show 2,215 ft.; drlg. 3,640 ft.
Transcontinental Oil Co.'s No. 1 Peckham, 330 ft. from S and W of R. N. Miller Sur. ..... Drlg. 165 ft.

SUTTON COUNTY

Independent Oil & Gas Co.'s No. 1 Willson, Sec. 30, Blk. A, 1,650 ft. from N, 2,310 ft. from W ..... Location.

TAYLOR COUNTY

Condor Pet. Co.'s No. 1 Allen, C of NW, Sec. 220, Blk. 64, H.T.C.R.R. Sur. ..... Spudding.
John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor., Sec. 46, Lunatic Asylum Land ..... Show oil 4,917 ft.; drlg. 5,320 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW, Sec. 155, Blk. D, M.-K.-T.R.R. Sur. ..... Shut down 1,285 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ..... Drlg. 3,135 ft.
Mrs. J. B. McPhee's No. 1 Sam Belt, C Sec. 78, Blk. D-7, E.L.R.R. Sur. ..... Shut down 880 ft.
Transcontinental Oil Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F.R.R. Sur. ..... Shut down 1,825 ft.; to run 12½-in. casing.
Woodley & Jones' No. 1 Pankenham, C SE NW, Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. ..... Shut down 640 ft.

TERRY COUNTY

Kingsland Oil Prod. Co.'s No. 1 Brownfield, C NW SW SW, Sec. 7, Blk. 1-A, E.L.R.R. Sur. ..... Fishing bailer 5,080 ft.

TOM GREEN COUNTY

Cannon et al's No. 1 Rust, 990 ft. S, 990 ft. W of NE cor. of Sec. 745 ..... Location.
Ellis et al's No. 1 Lewis, 450 ft. S and 150 ft. E of SE cor. of J.W. Sur. in Albert Black Sur., Sec. 75 ..... Show oil 428-43 ft.; fishing 5 3-16-in. casing 443 ft.
Fitzgerald & Taliaferro's No. 1 Bennett, C SW, Sec. 1,628, E. H. Ringer ..... Total depth 2,447 ft.; plugged back to 2,405 ft. to straighten hole.
E. W. Wiley et al's No. 1 Maier, 200 ft. from E, 110 ft. from N, Sec. 6, Blind Asylum Land ..... Drlg. 380 ft.

UPTON COUNTY

Gulf Prod. Co.'s No. 3-B Hughes, 160 ft. N and 161 ft. W of most southerly SE cor. of their 200-ac. lease "B" out of Wm. Teer Sur. ..... Rig.
Pure Oil Co.'s No. 3 Hughes, 150 ft. S and 767 ft. E of NW of their 300 ac., Sec. 4, Wm. Teer Sur. ..... Partly rigged up; shut down 610 ft.
T. P. Coal & Oil Co.'s No. 1 Belcher, 1,320 ft. from N and 2,310 ft. from W line, Sec. 10, Blk. 4½, G.C.& S.F.R.R. Sur. ..... Drlg. 430 ft.
T. P. Coal & Oil Co.'s No. 1 Reese, 330 ft. from N and E line, Sec. 2, Blk. 3 ..... Top salt 910 ft.; drlg. 2,505 ft.; top pay 2,480 ft.; 1,000 ft. oil in hole.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... Shut down 4,850 ft.
O. O. Owen's No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Gas sand 2,491-2,520 ft.; tested 125-700 ft. gas; shut down 5,727 ft.
Phantom Oil Co.'s No. 1 Ingram, 175 ft. W of E line and 300 ft. N of S line, Sec. 44, Blk. D-8, E.L.&R.R. Sur. ..... Show oil 1,535 ft.; hole full water 2,520 ft.; underreaming 10-in. casing 2,545 ft.
Valvert Oil Corp.'s No. 1 Bassett, C NE, Sec. 47, Blk. Y ..... Shut down 4,009 ft.

WARD COUNTY

Alpine Oil & Gas Co.'s No. 1 Dakan, 228 ft. from NE and 150 ft. from SE line, Tract 8, Sec. 11, Blk. 5, H.&T.C. Sur. ..... 1,000 ft. oil in hole; top pay 2,148 ft.; total depth 2,210 ft.; swabbing 30 bbls. per day; preparing to run tubing.
E. J. Anderson's No. 1 Johnson, 150 ft. N, 346 ft. E, Sec. 7, Blk. 32, H.&T.C.R.R. Sur. ..... Top salt 815 ft.; total depth 2,183 ft.; top pay 2,155 ft.; swabbing 20 bbls. per day; set 6⅝-in. casing 2,024 ft.
Atlantic et al's No. 1 Dorr, 1,730 ft. S, 990 ft. W, Sec. 2, J. Howe Sur. ..... Underreaming 8-in. casing 1,250 ft.; cleaning out 1,705 ft.
Atlantic and Delmar's No. 7 Hayzlett, 1,650 ft. from NE and NW of Sec. 17, Blk. 5 ..... Location.
Gulf Prod. Co.'s No. 3 Hutchins, 2,310 ft. from N and 330 ft. from W, Sec. 1, Blk. F, G.M.M.B.&A. Sur. ..... Top salt 1,035 ft.; top brown lime 2,310 ft.; increase in gas 2,608-10 ft.; show oil 2,685 ft.
Gulf Prod. Co.'s No. 7 O'Brien, 330 ft. S and W, Sec. 22, Blk. F, G.M.M.B.&A. Sur. ..... Hole full sulphur water 3,408 ft.; slopped over casing; drlg. 3,510 ft.; flowing sulphur water.
Gulf Prod. Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW, Sec. 18, Blk. 5, H.&T.C. Sur. ..... Show gas 1,960-70 ft.; filling up with sulphur water 2,520-27 ft.; salt water at 2,545 ft.; shut down.
Tex-Oil Production Co.'s No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 152, Blk. 34, H.&T.C.R.R. Sur. ..... Show gas 2,806-09 ft.; shot 30 qts. 3,245-75 ft.; drlg. 3,660 ft.; shot 120 qts. from 3,240-75 ft.; drlg. 3,965 ft. in lime.
Penn and Atlantic's No. 2 Bennett, 2,310 ft. S line, 1,650 ft. W line, Sec. 16, Blk. 34, H.&T.C.R.R. Sur. ..... Shut down 2,305 ft.; to recement 6-in. casing at 2,262 ft.
Penn and Atlantic's No. 1 Cooper, 330 ft. from NE and 990 ft. from NW of Sec. 43, Blk. 34, H.&T.C. Sur. ..... Bailing 6 bailers water, 5 bailers oil; show oil 2,657 ft.; drlg. 2,802 ft. in broken lime.
Shell Pet. Corp.'s No. 1 Owens, located NE cor. of Sec. 16, Blk. 15, H.&T.C.R.R. Sur. ..... Top pay 2,886-93 ft.; increase at 2,909 ft. and 3,023-32 ft.; shot 90 quarts from 2,473-93 ft.; increase in oil 3,022-32 ft.; drlg. 3,735 ft. in lime.
Shipley et al's No. 4 Hayzlett, 2,050 ft. NW of SE and 2,420 ft. NE of SW line of Sec. 17, Blk. 5, H.&T.C. R.R. Sur. ..... Top salt 720 ft.; shut down 2,546 ft.; plugged back 2,538 ft.; shot 90 qts. from 2,473-93 ft.; mudded and shut down.
Shipley et al's No. 5 Hayzlett, assume common line Secs. 16 and 17 is N and S, 220 ft. S and 1,910 ft. W, Sec. 17, Blk. 5 ..... Standard rig.
Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk. 1 ..... Preparing to resume drilling 385 ft.
Southern Crude Oil Prod. Co.'s No. 1 Harris, 1,458 ft. from N and 1,406 ft. from E of Sec. 30, Blk. B-19 ..... Cemented 12½-in. casing 663 ft.
Sturm & Paine's No. 1 Cummins, 748 ft. from NE and 155 ft. from NW of Sec. 7, Blk. 32, H.&T.C.R.R. Sur. ..... Drlg. 1,700 ft.
Sun Oil Co.'s No. 2 Sealy, 330 ft. from N and E of Sec. 88, Blk. F, G.M.M.B.&A. Sur. ..... Drlg. 1,984 ft.

WINKLER COUNTY

A. W. Phillips' No. 2 Brown et al, 2,000 ft. S and W of NE, Sec. 4, Blk. B-5, Public School Land ..... Top salt 1,300 ft.; shut down 2,832 ft.; show oil 2,775-85 ft.
Bashara et al's No. 2 Bashara, 990 ft. from S, 2,310 ft. from E, Sec. 17, Blk. B-3, Public School Land ..... Top brown lime 2,306 ft.; top white lime 3,008 ft.; 40,000,000 ft. gas at 3,030 ft.; flowed 37 bbls. daily through 2½-in. tubing.
Cinderella Syndicate's No. 1 Hendricks, 330 ft. N, 1,650 ft. W, Sec. 42, Blk. 26, Public School Land ..... Total depth 150 ft.; rig.
Humble Oil & Ref. Co.'s No. 3 Wahon-B, 2,310 ft. S and W of NE cor. Sec. 47, Blk. 26, School Land ..... Location.
Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor., Sec. 2, Blk. B-5 ..... Top brown lime 2,510 ft.; shut down 3,685 ft.
Shell and The Texas Company's No. 1-B Cowden, 660 ft. from S and W of Sec. 39, Blk. B-5, Public School Land ..... Drlg. red rock 298 ft.
Sun Oil Co.'s No. 1 Sealy, 2,310 ft. N line, 330 ft. from W line, Sec. 52, Blk. F, C.M.M.B.&A. Sur. ..... Run 8¼-in. casing 1,530 ft.; drlg. red rock 1,925 ft.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 53)

Nat. Gas Products Co.'s No. 2 U. S. Govt., NW cor. SE NW, Sec. 31-23-11 ..... Rigging up.
Nat. Gas Prod. Co.'s No. 2 U. S. Govt., NW cor. SE NW, Sec. 31-23-11 ..... Rig up.
Nat. Gas Prod. Co.'s No. 3 U. S. Govt., 1,520 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.
Nat. Gas Prod. Co.'s No. 4 U. S. Govt., 2,440 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.
Palmer Corp.'s No. 4 Roberson, 660 ft. E, 660 ft. S, NW cor. NW NE, Sec. 26-23-12 ..... 2,000 ft. oil in hole; W.O.S.R; T. D. 3,175 ft.
Phillips Pet. Co.'s No. 1-A Bollinger, (formerly Sales & Walker's No. 4 Bollinger) 696 ft. S, 1,120 ft. E, NW cor. SW, Sec. 30-23-11 ..... Cmtng. 6⅝-in. 3,117 ft; 5-ft. sand; T.D. 3,124 ft.
The Texas Co.'s No. 2 Peyton, 990 ft. N, 330 ft. W, SE cor., Sec. 25-23-12 ..... Began drlg. Jan. 30; cmtd. 10-in. 420 ft; drlg. 1,250 ft.
The Texas Co.'s No. 3 Peyton, 990 ft. N, 990 ft. E, SW cor., Sec. 30-23-11 ..... Derrick.
The Texas Co.'s No. 1 J. W. Wilkinson, 660 ft. N, 660 ft. W, SE cor. NE, Sec. 36-23-12 ..... O.W.D.D; completed Oct. 1, '27; 23,000 ft. gas in 2-ft. sand; T. D. 3,073 ft; rigging up to deepen.
John Woodley et als' No. 2 L. & A., 990 ft. N, 990 ft. W, SE cor., Sec. 14-23-12 ..... Completed Mar. 30, '26, flowing 200 bbls. fluid, 80% S.W; 4-ft. sand; T.D. 3,081 ft; rigging up to deepen.
Woodley et als' No. 1 Roberson, 330 ft. N, 330 ft. W. SE cor. SW NE, Sec. 22-23-12 ..... Rig up.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1 Taylor Trosper, 2,519 ft. S, 1,293 ft. E, CWL, Sec. 7-16-16 ..... Location.

CADDO PARISH—HOSSTON

Bayou State Oil Corp.'s No. 1 Barr, 450 ft. S, 650 ft. W, NE cor. NW SE, Sec. 30-22-15 ..... Began drlg. Feb. 6; drlg. 190 ft.
Bayou State Oil Corp.'s No. 29 Jolly, 425 ft. W, 775 ft. N, SE cor. NE ..... Completed Jan. 21; production 10 bbl., 1,003 ft.
Bayou State Oil Corp.'s No. 18 Levee Board, 450 ft. N, 150 ft. E, SW cor. NW, Sec. 23-22-15 ..... W.O.S.R; T.D. 1,003 ft.
Bayou State Oil Corp.'s No. 5 Owens, 1,220 ft. S, 560 ft. W, C, Sec. 21-22-15 ..... W.O.S.R. 1,023 ft.

CADDO PARISH—DIXIE

Dixie Oil Co.'s No. 1 B. Dickson, 300 ft. N, 300 ft. E, SW cor., Sec. 10-19-14 ..... Location.
Sam Gold's No. 3 Hunter, 660 ft. N, 660 ft. W, SE cor. SW NE, Sec. 17-19-14 ..... 200 ft. oil and S.W. in hole 2,457 ft; W.O.S.R; topped broken sand 2,415 ft.
Lide et als' No. 1 Dickson heirs, 795 ft. N, 200 ft. E, SW cor., Sec. 10-19-14 ..... Cmtd. 6⅝-in. 2,400 ft; W.O.S.R. 250 ft. oil; T.D. 2,458 ft.

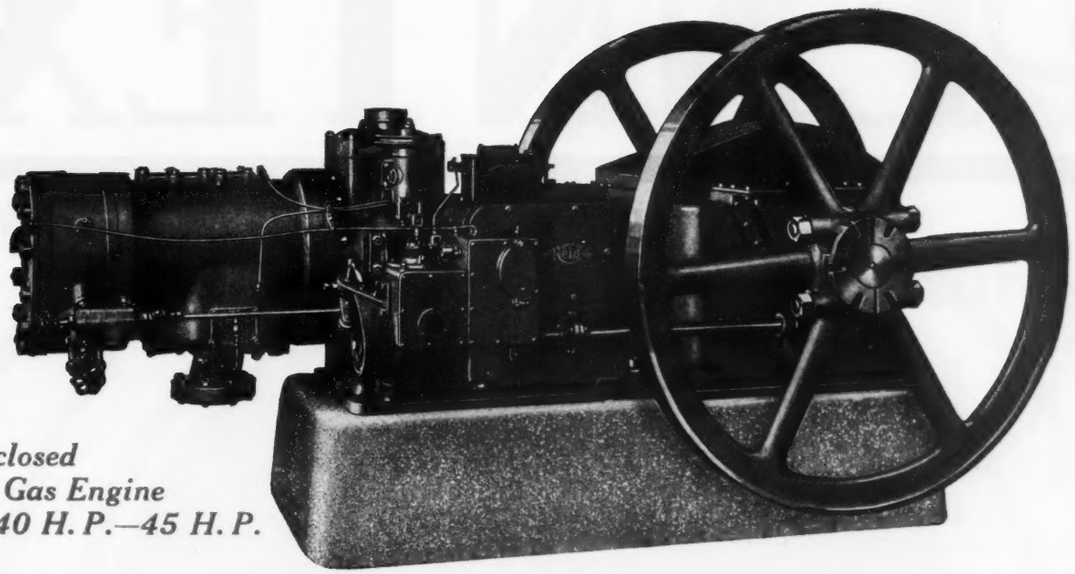
CADDO PARISH—MOORINGSPORT DISTRICT

Falcon Oil Co.'s No. 2 Nunnely, 3,012 ft. N, 3,091 ft. E, SW cor., Sec. 29-20-15 ..... Lost returns; S.D; T.D. 925 ft.

CADDO PARISH—OIL CITY

Gulf Ref. Co.'s No. 23-A Levee Board, 1,570 ft. S, 1,120 ft. W, NE cor. NW ..... W.O.S.R. 1,836 ft.
Gulf Ref. Co.'s No. 24-A Levee Board, 200 ft. S, 200 ft. W, NE cor. SW NW, Sec. 34-21-16 ..... Location.
H. M. Matson's No. 1 U. S. Govt., 900 ft. E, 400 ft. S. NW cor., Sec. ..... Drlg. 1,610 ft.
P. T. Mize's No. 1 La. O. R. Corp., 445 ft. N, 100 ft. E, SW cor. SE, Sec. 1-20-16 ..... Cmtd. 6⅝-in. 1,225 ft; W.O.S.R. 300 ft. oil; corrected depth 1,551 ft.
The Texas Co.'s No. 72 Levee Board, 725 ft. N, 210 ft. E, SW cor. SE, Sec. 27-21-16 ..... Rigging up.
Thomason & Fitzsimmons' No. 1 Howell, 600 ft. S, 300 ft. W, NE cor. SE, Sec. 13-22-16 ..... Cmtd. 8¼-in. 2,350 ft; T.D. 2,446 ft.

REID



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Shreveport Oil Corp.'s No. 4 Hicks, Sec. 32-19-15 ..... Cmtd. 8⅛-in. on top chalk 1,300 ft.

CLAIBORNE PARISH—HOMER

Oakes et als' No. 1 Richardson, NE SE, Sec. 19-21-17 .. S.D. 1,700 ft.

LA SALLE PARISH—URANIA

Ark. Fuel Oil Co.'s No. 5 Urania, 200 ft. S, 200 ft. E, NW cor. NE SE, Sec. 24-10-1e ..... Arranging to cmt. 8⅛-in. 4,620 ft.

Gulf States Gas Co.'s No. 1 Urania, 250 ft. W, 150 ft. S, NE cor., Sec. 1-10-1e ..... Drlg. 800 ft.

Hope Oil Co.'s No. 5 Urania, 660 ft. E, 150 ft. S, NW cor. SW SW, Sec. 19-10-2e ..... Derrick.

Kinney, Hardtner & Randall's No. 1 Kinney, SW SW, Sec. 7-10-2e ..... S.D. 1,570 ft.

S. D. Ray's No. 1 Urania, Sec. 19-10-2e ..... 1,200 ft. oil, some S.W; 3-ft. sand; W.O.S.R. 1,568 ft.

MOREHOUSE PARISH

Bahan & Bahan's No. 3 Feazel, 990 ft. S, 990 ft. W, NE cor., Sec. 3-20-4 ..... Cmtd. 6-in. 2,088 ft.

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 3-20-4 ..... Location.

J. B. Bond's No. 1 Haynes, 400 ft. N, 400 ft. E, SW cor., Sec. 34-21-5 ..... Cmtd. 12½-in. 196 ft; 6-in. 2,300 ft; T.D. 2,318 ft.

Consolidated Carbon Co.'s No. 2 White, Sec. 16-20-4 .... Fishing drill stem 2,115 ft; T.D.

J. S. Herkness' No. 12 Bowles, 3,392 ft. E, 3,300 ft. S, NW cor., Sec. 18-20-5 ..... D.S. test 4-ft. broken sand 2,385 ft; dry; top anhydrite 2,412 ft; drlg. 2,435 ft.

Magnolia Pet. Co.'s No. 8 U. S. Govt., 310 ft. S, 410 ft. E, NW cor., Lot 4, Sec. 33-21-5 ..... S.D. account high wtr; T.D. 204 ft.

Nat. Gas Prod. Co.'s No. 25 Crossett Lbr. Co., 1,444 ft. S, 793 ft. W, NE cor. NW, Sec. 29-21-5 ..... Drlg. rock 1,831 ft.

J. A. Noe et als' No. 1 Wright, 694 ft. N, 393 ft. W, C, Sec. 27-20-4 ..... Began drlg. Feb. 6; cmtd. 12½-in. 151 ft.

Southern Carbon Co.'s No. 14 Tensas, 660 ft. N, 660 ft. E, SW cor. NW, Sec. 34-21-4 ..... S.D. account high wtr; T.D. 2,081 ft.

United Carbon Co.'s No. 2 Patton, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 2-20-4 ..... Location.

United Carbon Co.'s No. 3 Patton, 660 ft. W, 660 ft. S, NE cor. SE, Sec. 2-20-4 ..... Location.

OUACHITA PARISH

Amalgamated Carbon Co.'s No. 2 Cole, 742 ft. E, 703 ft. S, NW cor., Sec. 43-19-4 ..... Drlg. 2,112 ft.

Chauvin Gas Co.'s No. 4 Slagle Johnson, 647 ft. W, 2,803 ft. S, NE cor., Sec. 47-18-4 ..... Rig up.

Hope Prod. Co.'s No. 1 Fairbanks, 660 ft. N, 624 ft. E, SW cor. SE, Sec. 25-20-4 ..... Arranging to plug back; T.D. 2,383 ft.

Hope Prod. Co.'s No. 2 Fairbanks, 1,876 ft. E, 628 ft. N, SW cor. SE, Sec. 25-20-4 ..... Location.

Hope Prod. Co.'s No. 3 Fairbanks, 1,876 ft. E, 628 ft. S, NW cor. NE, Sec. 36-20-4 ..... Location.

G. E. Jordan's No. 1 Anding, NW NE, Sec. 13-18-5 ..... Plugging back to 2,234 ft; T.D. 2,480 ft.

La. Gas & Fuel Co.'s No. 1 Beard, Sec. 46-18-4 ..... Cmtd. 6-in. 2,143 ft.

Magnolia Pet. Co.'s No. 2 fee 401, 660 ft. S, 660 ft. E, NW cor., Sec. 2-18-3 ..... Derrick.

New Process Carbon Co.'s No. 2 Cole, 1,971 ft. E, 1,820 ft. N, SW cor., Sec. 35-20-4 ..... Plugged back to 2,175 ft. and arranging to test; estimated 10,000,000 ft. gas; T.D. 2,857 ft.

Sho-Van Gas Products Co.'s No. 3 W. Va., 1,980 ft. S and W, NE cor., Sec. 8-18-4 ..... Cmtd. 6-in. 2,145 ft.

Sho-Van Gas Products Co.'s No. 4 W. Va., 1,078 ft. N, 294 ft. W, NE cor., Sec. 49, in Sec. 7 ..... Rig up.

Union Gas Products Co.'s No. 1 Hare, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 32-19-5 ..... Drlg. red beds 2,482 ft; dry at 2,406 ft; top anhydrite 2,376 ft.

United Oil & Nat. Gas Products Co. of La.'s No. 5 Guthrie, 6,896 ft. N, 6,022 ft. W, cor. Secs. 49, 26, and 25, Sec. 49-20-5 ..... Derrick.

United Carbon Co.'s No. 2 Puckett, 660 ft. N, 660 ft. E, SW cor. SW, Sec. 15-19-5 ..... Drlg. 2,432 ft.

United Carbon Co.'s No. 4 Spade, 774 ft. S, 2,081 ft. E, NW cor., Sec. 6-18-4 ..... S.D. 2,040 ft.

United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4 ..... Location.

United O. & N. G. Co.'s No. 2 Cole, 660 ft. S, 594 ft. E, C, Sec. 26-20-4 ..... Derrick.

RICHLAND PARISH

Ark. La. P. L. Co.'s No. 1 A. E. Purvis, 762 ft. N, 1,180 ft. W, SE cor., Sec. 34-17-6 ..... Blew in estimated 63,000,000 ft. gas; T.D. 2,450 ft.

Ark.-La P. L. Co.'s No. 3-B E. A. and F. B. Sartor, 300 ft. N, 330 ft. E, SW cor., Sec. 24-16-5 ..... Derrick.

W. C. Feazel's No. 1 R. B. Simon, 2,406 ft. W, 2,020 ft. S, NE cor., Sec. 11-16-6 ..... Rig up.

Franklin O. & G. Co.'s No. 1 F. Smith, Sec. 24-16-6 .... Cmtd. 6-in. 2,283 ft.

Hope Prod. Co.'s No. 1 C. M. Purvis, 632 ft. S, 1,232 ft. W, NE cor., Sec. 3-16-6 ..... Cmtd. 6⅝-in. 2,300 ft.

International Gas Products Co.'s No. 1-B Beck, 660 ft. S, 713 ft. E, NW cor., Sec. 36-16-6 ..... Cmtd. 6-in. 2,285 ft.

International Gas Products Co.'s No. 1 Minnie LaGrone, 769 ft. N, 858 ft. E, SW cor., Sec. 7-16-7 .... Location.

La. G. & F. Co.'s No. 1 Chapman, 2,497 ft. E, 1,980 ft. S, NW cor., Sec. 36-16-6 ..... Cmtd. 12½-in. 200 ft; drlg. 931 ft.

M. L. Meredith's No. 1 Holdness, 1,980 ft. S. 990 ft. W, NE cor., Sec. 15-16-6 ..... Cmtd. 6-in. 2,282 ft.

Nat. Gas Products Co.'s No. 1-C Sartor, 536 ft. N, 1,333 ft. E, SW cor. NW, Sec. 21-16-6 ..... Cmtd. 10-in. 417 ft.

Palmer Corp.'s No. 1-A F. N. Boykin, 660 ft. N, 660 ft. W, SE cor. NE, Sec. 20-17-6 ..... Cmtd. 6⅝-in. 2,300 ft.

Palmer Corp.'s No. 1-A Earl, Sec. 2-16-6 ..... Reported Jan. 22; blowout; estimated 45,000,000 ft. gas 2,498 ft; arranging to cmt. 4½-in.

Southern Carbon Co.'s No. 1 Hale, 660 ft. N, 760 ft. W, SE cor., Sec. 16-16-6 ..... Cmtd. 6-in. 2,282 ft; T.D. 2,282 ft.

Southern Carbon Co.'s No. 1 McCoy, 1,980 ft. E, 3,300 ft. S, NE cor., Sec. 16-16-6 ..... Began drlg. Feb. 8; cmtd. 12½-in. 182 ft.

United Carbon Co.'s No. 1 D. R. Sartor, 3,341 ft. W, 3,960 ft. S, NE cor., Sec. 11-16-6 ..... Began drlg. Jan. 29; cmtd. 12-in. 165 ft; 8-in. 825 ft.

SABINE PARISH—PLEASANT HILL

Ark. Fuel Oil Co.'s No. 4 Horne, 370 ft. S, 450 ft. W, NE cor. SW, Sec. 33-10-12 ..... Location.

Bridges-Clarke Oil Co.'s No. 1 Guy, 300 ft. N, 300 ft. E, SW cor. SE SE, Sec. 33-10-12 ..... 500 ft. S.W; recmtng. bottom; T. D. 2,486 ft.

Hatcher et als' No. 1 Moore heirs, 300 ft. N, 300 ft. E, C, Sec. 32-10-12 ..... Derrick.

Magnolia Pet. Co.'s No. 2 McLeroy, 230 ft. S, 200 ft. W, NE cor. W½ SE SW, Sec. 33-10-12 ..... Drlg. hard chalk 1,636 ft.

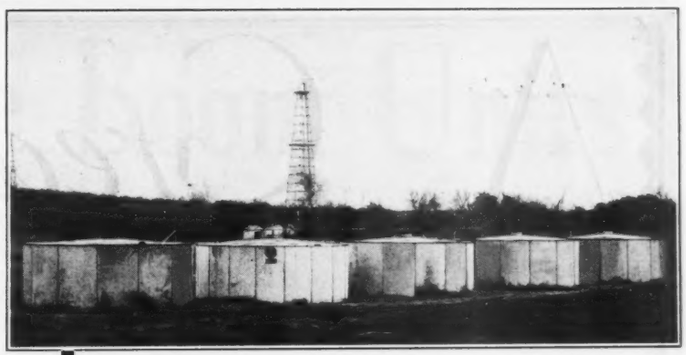
SABINE PARISH—ZWOLLE

Amerada Pet. Corp.'s No. 1 Bowman-Hicks, 330 ft. N, 330 ft. W, SE cor. NE NE, Sec. 33-8-12 ..... 500 ft. oil in hole; S.D; W.O; T. D. 2,456 ft.

Benedum & Trees Oil Co.'s No. 3 Bowman-Hicks, 330 ft. S, 330 ft. W, NE cor. SE, Sec. 34-8-12 ..... Rig up.

R. L. Gay, trustee's No. 6 Bowman-Hicks, 900 ft. N, 800 ft. W, SE cor. NW SE, Sec. 14-7-14 ..... Arranging test; S.O; T.D. 2,513 ft.

Benedum & Trees Oil Co.'s No. 4 Bowman-Hicks, 330 ft. N, 330 ft. W, C, Sec. 34-8-12 ..... Location.



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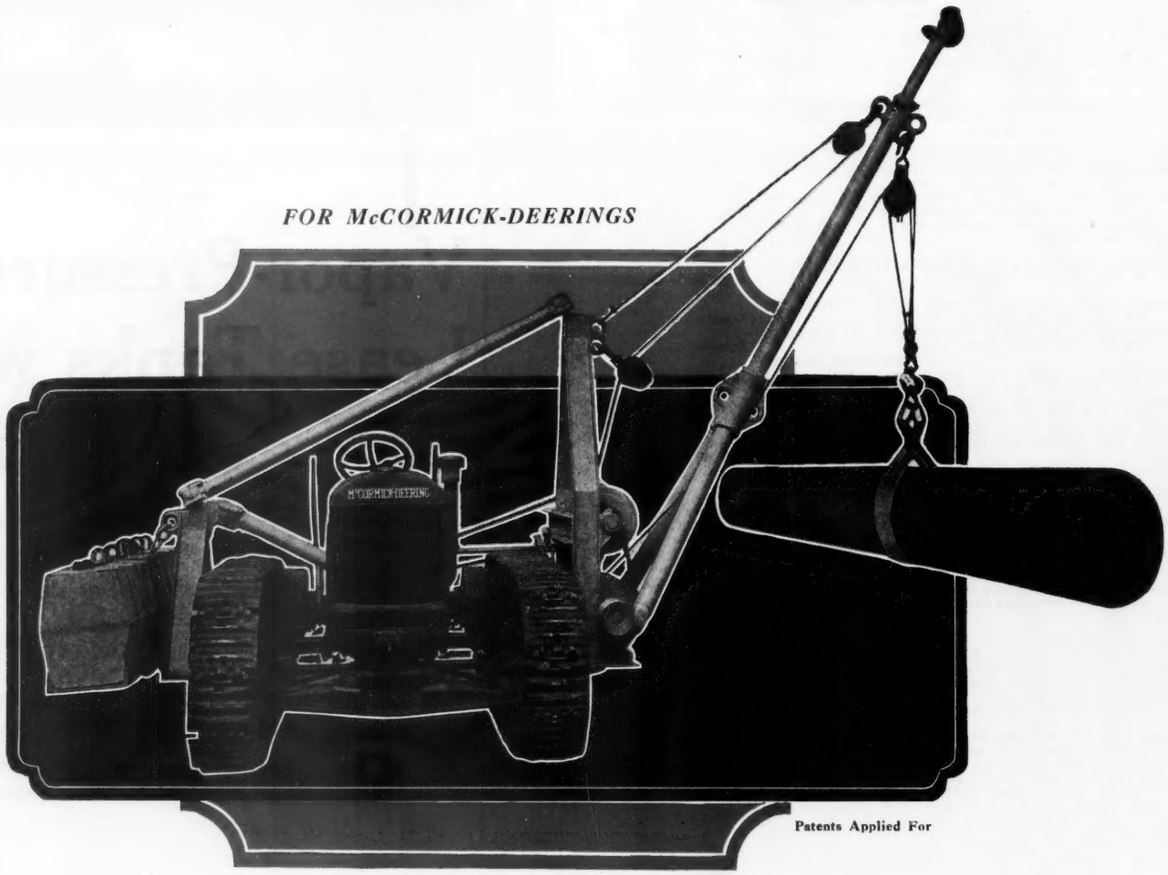

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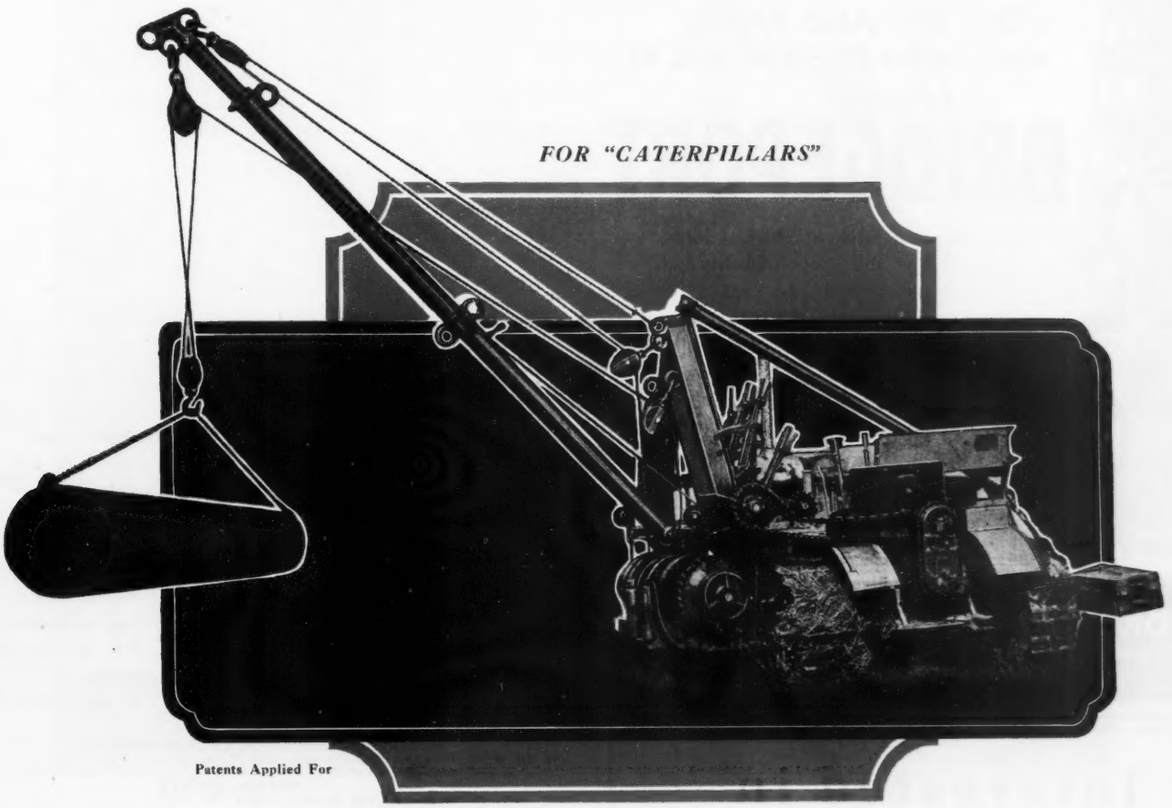

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No less of an achievement in pipe-line equipment are the W-K-M *Side Boom* UNITS designed and manufactured expressly for the various models of "Caterpillar" tractors.

For handling the largest sizes of oil and gas transmission pipe, back-filling, cleaning out work and similar ditch operations, the W-K-M *Side Boom* UNITS have proved themselves fully capable, reliable, and economical. There is probably no machine on the market, which, *combined* in *one unit*, has the capacities for such a variety of operations as permitted by W-K-M Units.

Each unit is equipped with an oscillating boom of great strength, which can be raised or lowered, swung or extended. Attachment to the tractor is very easy and simple and can be accomplished in a few hours *without cutting or drilling.* Full use of the tractor drawbar is in *no way hindered* at any time.

Men of the industry, who are desirous of reducing pipe line construction and maintenance costs to an absolute minimum, can learn many interesting facts, from a recent survey, by writing the *Industrial Division* of W-K-M Company, Inc.

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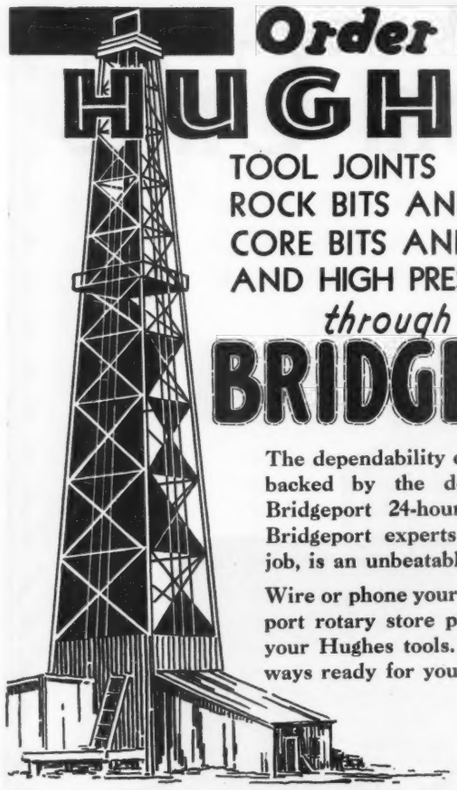

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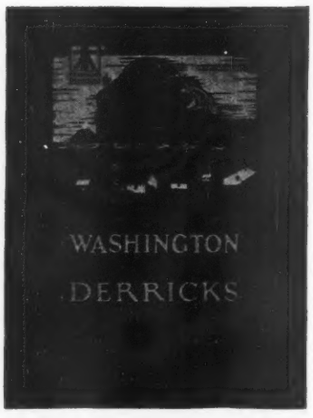

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Benedum & Trees Oil Co.'s No. 5 Bowman-Hicks, 900 ft. S, 1,400 ft. W, C, Sec. 34-8-12 ..... Derrick.
Benedum & Trees Oil Co.'s (was R. L. Gay, trustee's) No. 2-A Bowman-Hicks Lbr. Co., 200 ft. S, 200 ft. W, NE cor. NE NW ..... Cored top black shale 2,378 ft; T.D. 2,393 ft.
R. L. Gay, trustee's No. 3 Sabine Lbr. Co., 1,120 ft. N, 200 ft. E, SW cor., Sec. 13-7-14 ..... W.O. 120 ft. oil in hole; T.D. 2,255 ft.
Haynes Bros.' No. 1 Dover, 1,120 ft. W, 200 ft. N, SE cor. NE, Sec. 28-8-12 ..... Drlg. chalk 2,485 ft.
Ohio Oil Co.'s No. 2 Bowman-Hicks, 330 ft. N, 330 ft. W, SE cor. SE SW, Sec. 33-8-12 ..... W.O; 60 ft. oil in hole; T.D. 2,462 ft.
Olsen Bros.' No. 1 Keeler, SW cor. SW SE, Sec. 27-8-12 .. T.A. 2,625 ft.
Ruston Drlg. Co.'s No. 1 Bowman-Hicks, 330 ft. S, 330 ft. W, NE cor., Sec. 4-7-12 ..... Drlg. 1,540 ft.
Ruston Drlg. Co.'s No. 1-A Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. SW SW, Sec. 35-8-12 ..... Derrick.
Ruston Drlg. Co.'s No. 1 Holliday, 330 ft. N, 330 ft. E, SW cor. NW, Sec. 35-8-12 ..... Drlg. 6⅝-in. plug; T.D. 2,322 ft.
Sabine O. & G. Co.'s No. 1 Anderson, 200 ft. N, 200 ft. E, SW cor. SW NW, Sec. 19-18-13 ..... Drlg. 2,565 ft
Stovall Drlg. Co.'s No 1 Lefkovitz, 247 ft. N, 250 ft. W, SE cor. N½ SE NW, Sec. 33-8-12 ..... Began drlg. Feb. 10; cmtd. 10-in. 70 ft.
A. H. Tarver's No. 1 Sabine State Bank, 250 ft. N, 250 ft. W, C, Sec. 27-8-12 ..... Top chalk 2,332 ft; reaming to set 8-in; T.D. 2,333 ft.
Tippett Drlg. Co.'s No. 1 Hughes, 200 ft. S, 200 ft. E, NW cor. SW NW, Sec. 36-8-12 ..... Cmtd. 6⅝-in. on top chalk 2,406 ft; T.D. 2,410 ft.
Warner-Quinlan Co.'s No. 1 Sabine Lbr. Co., 238 ft. N, 328 ft. W, SE cor. NW NE, Sec. 34-8-12 ..... Drlg. in; 2,370 ft.
Warner-Quinlan Co.'s No. 1 Peterson, 660 ft. S, 660 ft. W, NE cor. NW SE, Sec. 26-8-13 ..... Cmtd. 6⅝-in. 2,170 ft; T.D. 2,178 ft.

UNION PARISH

Lyons Gas Co.'s No. 2 Jones, 1,190 ft. W, 138 ft. S, NE cor. NW, Sec. 11-20-3 ..... Rig up.

WEBSTER PARISH—COTTON VALLEY

Ohio Oil Co.'s No. 46 Bodcaw, 660 ft. N, 660 ft. E, SW cor. SW NW, Sec. 28-21-10 ..... Arranging to test 9-ft. sand; T. D. 4,689 ft.
Palmer Corp.'s No. 3 Miller, 660 ft. N, 660 ft. E, SW cor., Sec. 28-21-10 ..... Drlg. 4,035 ft.
Standard Oil Co.'s No. 1-B Crichton, 660 ft. S, 660 ft. E, NW cor., Sec. 32-21-10 ..... Began drlg. Jan. 24; cmtd. 12½-in. 494 ft; 9-in. 3,500 ft.

WEBSTER PARISH—SAREPTA AND SHONGALOO

Bateman et als' No. 2 Womble, 2,840 ft. S, 1,120 ft. E, NW cor., Sec. 1-22-11 ..... Cmtd. 6-in. 2,701 ft; T.D. 2,715 ft; 1,500 ft. fluid; 4-ft. sand; W.O.S.R.
Donohoe O. & G. Co.'s No. 1-B W. B. Roseberry, 250 ft. S, 250 ft. E, C, Sec. 19-23-9 ..... Began drlg. Nov. 25; S.D. 194 ft.
Pat Hudson's No. 2 S. Gardner, 330 ft. N, 300 ft. E, C, Sec. 1-22-11 ..... Derrick.
Pat Hudson's No. 1 B. L. Slack, 330 ft. W, 330 ft. N, SE cor. SW, Sec. 36-23-11 ..... Rig up.
Jacob Luskin's No. 2 Pardee, 1,270 ft. W, 50 ft. S, NE cor. NW, Sec. 3-22-11 ..... W.O.S.R. 2,656 ft.
Magnolia Pet. Co.'s No. 1 J. P. Baker, 1,120 ft. S, 225 ft. E, NW cor. SW, Sec. 35-22-11 ..... Drlg. sandy shale 3,365 ft.
Magnolia Pet. Co.'s No. 2 Denman, 100 ft. N, 100 ft. W, SE cor. NE NW, Sec. 1-22-11 ..... Drlg. shale and shell 2,716 ft.
Merritt & Merritt's No. 1 Boucher (no check), SE SE, Sec. 17-23-11 ..... Rig up.
Sarepta Oil Co.'s No. 1 L. S. Gardner, 300 ft. S, 300 ft. W, C, Sec. 1-22-11 ..... W.O.S.R; 600 ft. fluid; T.D. 2,719 ft.

ARKANSAS

JOHNSON COUNTY—CLARKSVILLE

Ark.-La. P. L. Co.'s No. 1 Patterson, 1,020 ft. S, 2,570 ft. E, NW cor., Sec. 14-10-24 ..... Drlg. shale 2,005 ft.

NEVADA COUNTY

Roy Davis et als' No. 1 Chas. Henry, 1,120 ft. N, 1,120 ft. W, SE cor., Sec. 10-13-20 ..... Derrick.
C. F. Steele's No. 1 E. W. Groves, Sec. 21-14-20 ..... Shut down.

OUACHITA COUNTY—SMACKOVER

L. H. Hamilton's No. 1 Arnold & Doyle, SE SE, Sec. 23-15-16 ..... Waiting on power to pump; T.D. 2,010 ft.
Southern Producing Co.'s No. 3-A Watts, 700 ft. E, 150 ft. N, SW cor. SE SW, Sec. 27-15-15 ..... Derrick.
Standard Oil Co.'s No. 11 Powell, 150 ft. S, 150 ft. E, NW cor. NE NW, Sec. 34-15-15 ..... Drlg. 2,014 ft.
J. D. Wingfield's No. 1 Martin, SW cor., Sec. 26-15-15 .. Set 6⅝-in. 2,085 ft; tested little oil and S.W; W.O; T.D. 2,115 ft.

OUACHITA COUNTY—STEPHENS

Magnolia Pet. Co.'s No. 1 Grayson, C, Lot 30, NE SE, Sec. 21-15-19 ..... W.O.S.R; 800 ft. fluid; T.D. 1,478 ft.

UNION COUNTY—EL DORADO

H. L. Hunt's No. 6 Pratt, 150 ft. N, 330 ft. E, SW cor. NE NE, Sec. 7-18-15 ..... Setting tubing; T.D. 2,210 ft.
Malloy & Co.'s No. 4 Goodwin, 300 ft. N, 300 ft. E, SW cor. NE NE, Sec. 36-17-16 ..... Began drlg. Feb. 8; cmtd. 8-in. 110 ft.
Malloy & Co.'s No. 3 Robertson, NE cor. S½ SW NE, Sec. 6-18-15 ..... Location.
Rice et als' No. 1 W. Raity, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15 ..... Spudded July 18; cmtd. 10-in. at 92 ft.
Weisinger et als' No. 1 Lacy, 181 ft. S, 557 ft. W, NE cor. NW, Sec. 6-18-15 ..... Drlg. in with cable tools; T.D. 2,175 ft.
Weisinger & Ball's No. 1 Rogers, 1,014 ft. N, 150 ft. E, SW cor. E½ SW SE, Sec. 31-17-15 ..... Drlg. 1,820 ft.

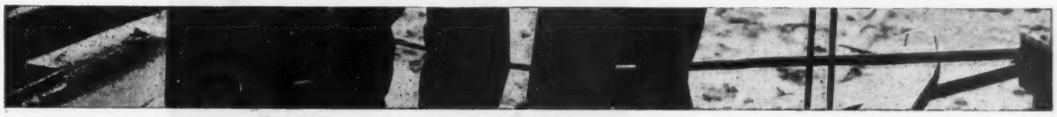
UNION COUNTY—SMACKOVER

R. L. Champan's No. 3 Bradley, 730 ft. N, 330 ft. E, SW cor. Lot 3, NW, Sec. 2-16-16 ..... Derrick.
Lion Oil Ref. Co.'s No. 1 James, CWL, Lot 2, NW, Sec. 6-16-15 ..... T.A. 2,018 ft.
Root Refineries, Inc.'s No. 8 Calloway, 510 ft. S, 150 ft. W, NE cor., Sec. 4-16-15 ..... 1,000 ft. fluid, 25% oil, show of gas; setting tubing; T.D. 2,289 ft.

EAST TEXAS
PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 11 Werner, 1,350 ft. S, 1,052 ft. W, NE cor. E. F. Mitcheson Sur. ..... Drlg. 2,320 ft.
Calatex O. & G. Co.'s No. 3 Caldwell, 243 ft. S, 1,034 ft. W, SE cor. John Womack Sur., in Jas. Shadoin Sur. ..... Began drlg. Dec. 28; cmtd. 10-in. 42 ft; D.S. test 1,067 ft; S.W. and show of gas; S.D; W.O; Nos. 1 and 2 drilled by M. A. Smith et al.
S. H. Gardner's No. 4 Rocquemore, 5,176 ft. E, 4,432 ft. S, NW cor. B. C. Jordan Sur. ..... Rigging up.
Magnolia Pet. Co's No. 2 G. C. Tiller, Jane Thorpe Sur. .. O.W.D.D; drlg. lime 2,950 ft.
Magnolia Pet. Co.'s No. 6 G. C. Tiller, 393 ft. S, 1,990 ft. E, NW cor. Jane Tharp Sur. ..... Drlg. lime 3,030 ft.
Nat. Gas Prod. Co.'s No. 3 Roquemore, B. C. Jordan Sur. Drlg. 4,000 ft.
The Texas Co.'s No. 4 H. L. Brumble, 945 ft. E, 745 ft. N, SW cor., E. F. Mitcheson Sur. ..... Began drlg. Feb. 8; cmtd. 10-in. 42 ft; drlg. 100 ft.

...WIRE ROPE EXPERIENCE...



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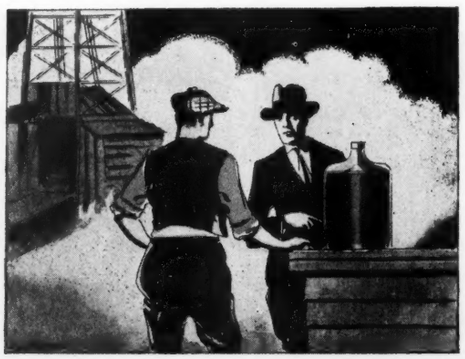

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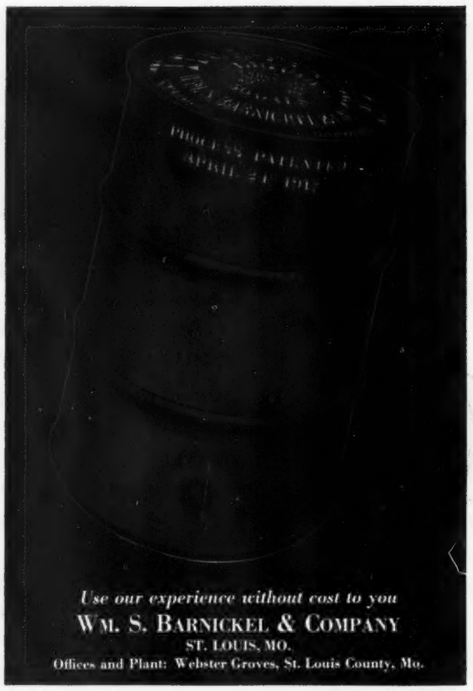
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WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 57)

CALDWELL COUNTY

J. Harper et al's No. 1 Crenshaw, in the J. Burleson Sur., 600 ft. NE and 320 ft. NW of farm ..... T. D. 1,689 ft. (corrected depth); completed pumping 50 bbls. per day from Serpentine.

W. E. Allaun and Calco Pet. Co.'s No. 1 Martin ..... T. D. 2,920 ft.; preparing to shoot.

Keen & Malcolm's No. 1 Mollie McNeal, George C. Kimball Sur., 2,500 ft. to W line, 860 ft. to N line, 1 mile S from old Luling Field ..... T. D. 890 ft.; shut down.

San Antonio Petroleum Corp.'s No. 1 Gustave Walkerhagen, Thomas Maxwell Sur., 150 ft. to NW and SW lines, 11 miles W from Lockhart ..... T. D. 1,425 ft.; shut down; expect to carry hole to Glen Rose.

G. R. McIntire's No. 1 J. G. Towns in the I. Weldon Sur., 4,900 ft. to NE line, 1,350 ft. to SE line of Sur. ..... T. D. 2,630 ft. in chalk; shut down.

Cranfill & Reynolds' No. 1 M. L. Stroun, 150 ft. from SE and SW line of farm of Pablo Martenz Sur. .... Spudded in.

Trinity Drillers' No. 1 McMullen, 2,125 ft. from NE line, 150 ft. from NW line of Sur., Gibson Betty Sur. .... Location.

W. H. Harper's No. 3 Thomas, J. Roberts Sur. ..... Dropped from reports until work is resumed.

DEWITT COUNTY

Gibson & McIntyre's No. 1 William Van Roeder ..... T. D. 1,480 ft.; shut down.

F. P. Zoch's No. 1 Steinman, John Garelli Sur., 976 ft. from SW line, 1,797 ft. from NW line ..... T. D. 4,090 ft.; drlg. in shale and gumbo.

H. T. Roe's No. 1 Leinhardt ..... T. D. 1,750 ft.; shut down.

DIMMITT COUNTY

Texas Fuel Gas Co.'s No. 1 City Nat'l Bank (Laxon) .... T. D. 680 ft.; depth corrected.

DUVAL COUNTY

National Oil Co.'s No. 2 Ball, Agua Poquita Sur., Blk. 3.. T. D. 3,010 ft.; drlg. in hard sand; taking core.

F. P. Zoch's No. 1 King, Blk. 25, Hoffer and Smith Subd., W. R. King ranch, Diego Hinijosa grant, 660 ft. N line, 660 ft. E line ..... T. D. 2,300 ft.; drlg.

Southern Oil Co.'s No. 1 Welder Wood, Sur. 215 ..... T. D. 750 ft.; standing waiting on water.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlaw ..... Shut down 3,000 ft. awaiting orders; expect to drill deeper.

Phillips Pet. Corp.'s No. 2 A. G. Holman, 330 ft. from N and E lines of SE of tract, C.C.S.D.&N.G.R.G. Sur. No. 25 ..... Location.

FRIO COUNTY

Frank B. LeFeure's No. 1 H. W. and R. L. Eschenburg, Edward Gallagher Sur. No. 789, 3,980 ft. W of SE cor. of Edward Gallagher Sur. No. 788 and 1,320 ft. S of N line of Edward Gallagher Sur. No. 789 .... Rigging up.

GOLIAD COUNTY

Compton Oil Co.'s No. 1 Fromme, Dexter Sur. ..... Drop from report until work is resumed.

Wm. F. Morgan's No. 1 George Ray in Pedro Trevano Sur., 150 ft. from SE and NW line of George Ray 627-a. tract ..... Spudded in.

GONZALES COUNTY

Acme Oil & Royalty Corp.'s No. 1 Weber, Thomas Wright Sur. ..... T. D. 1,850 ft.; drlg. in hard rock.

Fitzsimmons & Perrinot's No. 1 Z. Huber, 2,100 varas from NW line, 1,450 varas from NE line (river) of survey, 2¾ miles SE of Darst Creek in Stephen Smith Sur. ..... T. D. 1,610 ft.; drlg. in sandy shale.

Alice R. Garrett's No. 1 W. H. Cardwell, 150 ft. from SW line, 1,650 ft. from SE line of Sur., 12 miles S from Gonzales in the Byrd Lockhart Sur. ..... Spudded and shut down.

Adams & Lyles' No. 1 Jackson Sur. ..... T. D. 1,400 ft.; drlg. in shale.

Linderman Brothers' No. 2 F. H. Frampton, in Richard Heath Sur. ..... Dropped from reports until work is resumed.

Finnell & Elam's No. 1 Robinson, Liverpool Sur. ..... T. D. 1,720 ft.; shut down.

A. G. Keiffer's No. 1 B. B. Dix ..... Dropped from reports until work is resumed.

GUADALUPE COUNTY

Pagenkopf & Kennon's No. 1 Halm, Joseph Kent Sur., 5 miles E of Seguin ..... T. D. 2,030 ft.; abandoned; dry.

L. M. Conner et al's No. 1 Tom Havbirth (212-ac.), 1,000 ft. from NE line, 4,500 ft. from NW line of the Robert Hall Sur. ..... Location.

Turman et al's No. 1 St. Charles, 150 ft. N line, 300 ft. from W line of Sur., 5 miles SW of Grayburg's No. 1 Wells, SE cor. of county in the J. A. Miller Sur. ..... T. D. 50 ft.; set casing.

Trinity Drillers' No. 1 J. M. White, 975 ft. from NE line, 750 ft. from SE line of 166-ac. farm in the Mich Miller Sur. ..... Location.

HAYS COUNTY

E. A. Bucklin's No. 1 A. Elsner ..... T. D. 1,800 ft.; drlg. in lime.

John H. Foster, trustee's No. 2 W. G. Barber, 7 miles SE of Buda ..... T. D. 671 ft.; shut down.

JACKSON COUNTY

Wright Brothers' No. 7 Drushell ..... T. D. 8,875 ft.; abandoned.

JIM HOGG COUNTY

Deep Rock Oil Co.'s No. 1 Kelsey ..... T. D. 2,582 ft.; temporarily abandoned.

L. M. Holden's No. 4 Jones, 1,820 ft. to N line, 1,320 ft. to E line of 160 acres out of Share 5 "A," Dego Hinojosa grant ..... T. D. 42 ft.; temporarily abandoned.

JIM WELLS COUNTY

E. W. Ogden's No. 1 G. Farris, M. Perez Sur. ..... T. D. 2,615 ft.; shut down.

KARNES COUNTY

Ruby & Claypool's No. 1 Tom V. Zepeda Sur., 850 ft. N line, 1,600 ft. E line ..... Install new rotary at 1,238 ft.

Hurador Oil Co.'s No. 1 W. E. Porter ..... T. D. 3,400 ft.; installing new rotary.

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur. ..... T. D. 700 ft.; drlg.

Dixon Oil Co.'s No. 1 Ottmar Behr, W of H.T.&B.R.R. Sur., 3½ miles SE from Sisterdale ..... Location.

Sterling's No. 1 Willie Werner, 2 miles NW from Borgett No. 1 Haag ..... T. D. 924 ft.; shut down; hole making one-half bbl. oil when bailed.

KLEBERG COUNTY

Bowen-Sarles' No. 1 Robert H. Simmons, Sec. 7, King Subd., 3 miles W from Ricardo ..... T. D. 415 ft.; standing.

KINNEY COUNTY

Lloyd Oil Co.'s No. 1 G. B. Moore, Sur. 117 ..... T. D. 3,000 ft.; producing sulphur water.

A. Blume et al's No. 2 Herbst, 1,731 ft. W and S lines of Sur. in the Poindexter-Burns Sur. ..... Rigging up cable tools.

Mardon Oil Co.'s No. 2 Jim Clamp, in the John Winters Sur. No. 346, near No. 1 ..... Moving in cable tools.

LEE COUNTY

Byrd et al's No. 1 H. L. Bastie, 1,200 ft. N and 1,000 ft. E of 80-ac. tract of Wm. Johnson ..... Drlg. 3,000 ft.

Texas-Louisiana Carbon Corp.'s No. 1 Bryan, in the S. F. Austin Sur., 1,200 ft. N and W of 1,200-ac. farm ..... Shut down 3,120 f'

Todor Oil Corp.'s No. 1 H. Zoesch, in the J. Meeks Sur., 150 ft. N and 900 ft. W of S. Meeks Sur. ..... Shut down 2,050 ft.

LIVE OAK COUNTY

O'Neil & Catlett's No. 1 Smith, 900 ft. SW line, 150 ft. NW line ..... T. D. 3,560 ft.; reported testing sand.

Dr. J. K. Rowan Co.'s No. 1 Lynne Ranch, 171 ft. W of George West ..... Location.

Simmons Oil Co.'s No. 1 Richard Coquat, in James C. Hill Sur., 2,250 ft. to S line, 1,750 ft. to E line, 7 miles NE of Oakville ..... T. D. 2,700 ft.; drlg. in shale.

MAVERICK COUNTY

Rycade Oil Corp.'s No. 4 J. M. Chittim ..... T. D. 6,130 ft.; pulling csg. to abandon.

Rycade Oil Corp.'s No. 6 Chittim, 1,455 ft. from S. 320 ft. from W of Sec. 116, Blk. 7, L&G.N. Sur. ..... Rigging up.

Rycade Oil Corp.'s No. 5 Chittim ..... T. D. 3,442 ft.; standing; hole full of sulphur water.

Rycade Oil Corp.'s No. 5 Sullivan, in C of Sec. 82, Blk. 7, in the I.&G.N. Sur. ..... Moving in.

Rycade Oil Corp.'s No. 3 Chittim, Blk. 7, Sur. 116, H.& G.N., 175 ft. N of No. 1, 10 ft. W, 225 ft. S line .... T. D. 6,635 ft.; producing light oil and gas.

MEDINA COUNTY

Pat Armstrong's No. 1 C. W. Butts in George C. Hanson Sur. ..... T. D. 1,102 ft.; shut down.

Pan American Pet. Co.'s No. 1 Harrison, Sur. 799, 15 miles S from Hondo ..... Spudded in and shut down.

Donaldson Oil & Dev. Co.'s No. 2 Adams Co., James Hillemmeyer No. 25 Sur., 500 ft. to E line of Sur., 150 ft. to S line of N half of Sur. ..... Derrick.

Pat Armstrong's No. 1 Crawford, 1,389 ft. N line, 2,550 ft. E line of Sur., 478.6 miles W from Devine ..... Rigging up.

Pearson Oil Co.'s No. 4 Mangold, 1,600 ft. W of E line, 1,800 ft. N of S line of Sur. in the I. S. Palmer Sur. No. 20, south from Noonan ..... T. D. 765 ft.; blowing out making 40,000,000 ft.; surface csg. set.

Mid-Kansas-Gulf's No. 1 Jessie Newton, 150 ft. E of W line, 750 ft. N of S line of 624-ac. tract., E one-third of Maximo Bernald Sur. 762, 15 miles SW from Hondo ..... Rigging up for Edwards test.

Pure Oil Co.'s No. 1 Nick F. Fahn in Amos Hudson Sur. No. 587, near NW line of Sur. ..... Core drilling.

Cecil Switzer's No. 1 Zerr, 6 miles west of Hondo ..... T. D. 3,710 ft.; fishing for tools.

R. C. Hill's No. 1 A. Wurzbach, G. Areola Sur., 500 ft. E line, 600 ft. S line ..... Location.

MILAM COUNTY

Service Oil & Gas Co.'s No. 1 Muldrow, L. Taylor Sur., SE cor. ..... Location.

Hill & Bonwell's No. 1 B. Booker, James Welch Sur. .. Fishing 2,020 ft.

Lloyd Oil Corp.'s No 1 San Clement, Fokes Sur. ..... Spudded in.

A. H. Wray's No. 1 D. D. Fowler ..... T. D. 1,688 ft.; sidetracked 360 ft. of drill pipe lost in hole; now drlg.

McMULLEN COUNTY

Cowboys Oil Co.'s No. 1 Shiner, H. M. Brewer Sur. .... T. D. 2,285 ft.; washing to bottom; to deepen.

Southern Crude Oil Purch. Co.'s No. 1 J. B. Baker, 2,310 ft. from S and E lines of Sec. 7 in the F. M. Lowe Sur. ..... Spudded in.

NUECES COUNTY

H. Grimm et al's No. 1 A. R. Roberts, Blk. 79,, Winter Vegt. Garden Subd., 6 miles NW of Robstown, 12 miles NE Agua Dulce Field ..... T. D. 2,426 ft.; standing.

SAN PATRICIO COUNTY

LaFeria Oil & Gas Co.'s No. 1 C. C. Smith in J. C. White Sur., 690 ft. to N line, 350 ft. to E line ..... T. D. 2,252 ft.; set 6⅝-in. csg. 2,246 ft.; waiting on cement.

STARR COUNTY

Adams, Scanlon, Scanlon & Wright's No. 1 Margo, Por. 71, Jurisdiction of Mier, 1,921 ft. W line, 430 ft. N line ..... Standing at 30 ft.

Smith & Adams' No. 1 Welch, Pedernal Sur. ..... Standing at 757 ft.; sand showing gas.

UVALDE COUNTY

Waldrop & Welch's No. 1 H. S. Benson, 2 miles NW of Uvalde ..... T. D. 770 ft.; setting 8¼-in. csg. in Edwards; report oil showing.

Phantom Oil Co.'s No. 1 Claudt, Sur. 661 ..... Derrick.

WILLACY COUNTY

Weimer-Richardson's No. 1 Elmore ..... T. D. 1,860 ft.; shut down in gumbo.

WILLIAMSON COUNTY

Harlem et al's No. 1 H. H. Stiles, in the J. Bevil Sur., 220 ft. N and 330 ft. E of Sur. ..... Rigging up.

Fred Beaty's No. 1 H. Bland, 450 ft. from N line, 1,000 ft. from E line of tract in the P. Coursey Sur., 1 mile E from Taylor ..... T. D. 1,120 ft.; shut down in Taylor.

G. B. Peterman's No. 1 J. C. Abbott, 310 ft. from E line, 30 ft. from S line of tract in the S. Miller Sur. ..... Location.

G. B. Peterman's No. 2 J. C. Abbott, 450 ft. from S and W line of Abbott 100-ac. tract in the Simon Miller Sur., SE from Thrall ..... Rigging up.

Powell & Kydendall's No. 1 Christian Mager in the W. Byerly Sur., 150 ft. N and 450 ft. E of farms of 150 acres ..... Shut down 1,501 ft.

Scomyers Edwards et al's No. 1 J. C. Abbott, 88 ft. from N line, 300 ft. from E line of Abbott 100-ac. tract in the Simon Miller Sur., SE from Thrall. .... Rigging up.

Simms Oil Co.'s No. 1 L. E. Lawrence, 150 ft. from N line, 150 ft. from W line of Lawrence 100-ac. tract in the Simon Miller Sur., SE from Thrall ..... Location.

L. W. Wilson et al's No. 1 W. L. Lawrence, 150 ft. from W line and C N and S of 35-ac. tract or 1,400 ft. from SW line, 1,450 ft. SW line of H. Owens Sur. .... Rigging up.

WILSON COUNTY

Rycade Oil Corp. et al's No. 1 George Hice, Juan Delgado Sur., 650 ft. W of Cibolo River, 150 ft. SE line of tract ..... T. D. 3,280 ft.; drlg. Edwards; tested 3,220-30 ft. dry.

ZAPATA COUNTY

John Pappas' No. 2 Cuellar, Por. 33 and 34 ..... T. D. 1,856 ft.; sand 1,850-56 ft.

National Oil Co.'s No. 1 D. B. Adams ..... T. D. 690 ft.; shut down; lack of water; making considerable gas.

ZAVALA COUNTY

Tritex Oil Co.'s No. 1 Clay Burns ..... T. D. 780 ft.; standing.

Tritex Oil Co.'s No. 2 Childress, one-fourth mile NW of old Dominion Co.'s No. 1 Pryor ..... Drlg. 650 ft.

Weigand Brothers' No. 1 W. L. Gates, Hooper & Wade Sur. No. 13, 1,320 ft. S of N line, 1,220 ft. W of NE cor. Sur., about 16 miles S of Batesville ..... T. D. 900 ft.; drlg.

Jack Baldwin's No. 1 J. R. Price, in the W. E. Erskin Sur. No. 34 ..... Spudded in and shut down.

Southern Crude Oil Purch. Co.'s No. 1 Nat M. Washer in the T. Pinckhardt Sur. No. 180, 1 deg. E, 6,795 ft. from SE cor. ..... T. D. 1,640 ft.; drlg. in hard shale.

Ike Pryor's No. 1 Martha Campbell, 400 ft. from N line, 5,400 ft. from E cor. of Sur., Sec. 99, in the Martha Campbell Sur., 3½ miles NE from La Pryor.. T. D. 535 ft.; drlg.

Texas Gas & Fuel Co.'s No. 2 West in the W. Zuniga Sur. ..... T. D. 1,818 ft.; shut down; estimated 4,000,000 ft. gas; hole full salt water.

Texas Fuel & Gas Co.'s No. 4 West Sur. 44 ..... T. D. 1,025 ft.; drlg. in blue shale; to be drilled to 2,500 ft.

Texas Fuel & Gas Co.'s No. 1 Matthews in upper Byrd Ranch ..... T. D. 905 ft.; drlg. in shale.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 54)

Sun Oil Co.'s No. 2 J. Wilburn (southeast) ..... Drlg. shale and lime 4,924 ft.
Sun Oil Co.'s No. 3 J. Wilburn, southeast ..... Drlg. gumbo and lime 3,528 ft.
Sun Oil Co.'s No. 4 J. Wilburn, southeast ..... Drlg. sand and boulders 1,230 ft.
Sun Oil Co.'s No. 4 Chambers (south) ..... Drlg. lime 4,962 ft.
The Texas Company's No. 1 Lawrence ..... Pulling screen 5,367 ft.
Unice Oil Co.'s No. 2 Feldman, east ..... Drlg. lime 4,839 ft.
Yount Lee Oil Co.'s No. 11 Chambers, south ..... Swabbed salt water 5,506 ft.; pulling screen.
Yount Lee Oil Co.'s No. 12 Chambers, south ..... Drlg. sand rock 1,690 ft.
Yount Lee Oil Co.'s No. 13 Chambers, south ..... Rig.
Yount Lee Oil Co.'s No. 2 Phillips, southeast ..... Drlg. oil sand 5,228 ft.
Yount Lee Oil Co.'s No. 1 Zadie Fisher, southeast ..... Drlg. shale and lime 3,910 ft.

BOLING—FORT BEND AND WHARTON

Houston Gulf Gas Co.'s No. 1 Fields (northwest) ..... Total depth 4,277 ft. in heaving shale; reaming.

RACCOON BEND—AUSTIN COUNTY

Humble & Valley's No. 5 Austin College ..... Deepened from 2,998 ft. to 3,178 ft.; resetting.
Humble Oil & Refg. Co.'s No. 8-B Deutrich ..... Sidetracking 1,090 ft.
Humble & Valley's No. 9-A Deutrich ..... Shut down 3,200 ft.
Humble & Valley's No. 1 Duncan, State land ..... Drlg. shale 2,295 ft.
Humble & Valley's No. 6 Gotosky ..... Shut down 3,177 ft.
Humble & Valleys No. 1-B Machamehl ..... Shut down 3,602 ft.
Humble & Valley's No. 1-C Mitchell ..... Location.
Humble & Valley's No. 6 Mueller ..... Rigging up to pump 3,270 ft.
Humble & Valley's No. 7 Urban ..... Standing 1,166 ft.
Humble & Valley's No. 8 Urban ..... Comp. pumping 63 bbls. 3,160 ft
Humble & Valley's No. 7-A Walton ..... Shut down 1,190 ft.
Humble & Valley's No. 3-A Washington ..... Drlg. shale and sand 3,154 ft.
Humble & Valley's No. 4 Woodley ..... Standing 1,212 ft.
Humble & Valley's No. 5 Woodley ..... Standing.

DE WALT—FORT BEND COUNTY

Humble Oil & Refining Co.'s No. 2-B Bankers Mortgage.. Set liner to test 3,727 ft.
Humble Oil & Refining Co.'s No. 11 Brazos ..... Comp. flowing 900 bbls. oil 3,725 ft.
Humble Oil & Refg. Co.'s No. 9 Hammer fee ..... Location.
Humble Oil & Refg. Co.'s No 13 Sugarland ..... Rig.
Humble Oil & Refg. Co.'s No. 3-B Sugarland ..... Drlg. shale and lime 3,232 ft.
Humble Oil & Refg. Co.'s No. 9 Nelson ..... Derrick.

HUMBLE—HARRIS COUNTY

John Deering's No. 5 Bissonet ..... Waiting cement to set.
Humble Oil & Refg. Co.'s No. 8 Williams (south) ..... Drlg. sandy shale 5,062 ft.
Humble Oil & Refining Co.'s No. 2 Trahon (south) ..... Drlg. sticky shale 5,195 ft.
Rio Bravo Oil Co.'s No. 1 fee, west ..... Rigging up.
South Texas Petroleum Co.'s No. 14 Morris, south ..... Drlg. hard shale and lime 4,245 ft.
South Texas Petroleum Co.'s No. 3 Lee ..... Sticky shale 4,841 ft.; cemented 9⅝-in. casing.
Harvey Smith's No. 1 O'Boyle (west) ..... Location.
South Texas Petroleum Co.'s No. 4 Lee (south) ..... Location.
South Texas Petroleum Co.'s No. 2 Burt (east) ..... Derrick.
Sun Oil Co.'s No. 4 Bender (west) ..... Rig.
The Texas Company's No. 1 Atlantic & Gulf, southeast . Rig.
The Texas Company's No. 30 Carroll, northeast ..... Comp. flowing 105 bbls. an hour 3,102 ft.
The Texas Company's No. 36 Kohler, northeast ..... Drlg. sticky shale showing oil and gas 4,857 ft.
The Texas Company's No. 24 House, north ..... Location.
West Production Co.'s No. 2 Foster ..... Comp. flowing 1,500 bbls. oil 4,541 ft.

BLUE RIDGE—FORT BEND COUNTY

Humphreys Corp.'s No. 1 West-Schenck (workover) ..... Drilling.
Sinclair Oil & Gas Co.'s No. 1 Blakely ..... Spudding.
Sinclair Oil & Gas Co.'s No. 4 Blakely (workover) ..... Rigging up to deepen.

PIERCE JUNCTION—HARRIS COUNTY

Anderson & Plummer's No. 6 Whitehead (workover) ... No report.
Marland Oil Co.'s No. 2 Prudential (workover) ..... No report.
Navarro Oil Co. and Texas Exploration Co.'s No. 18 Dooley ..... Drlg. hard sand 1,961 ft.
Pure Oil Co.'s No. 1 Herman (workover) ..... Swabbed salt water 4,981 ft.
Pure Oil Co.'s No. 2 Herman, southwest ..... Started drilling.
Rio Bravo Oil Co.'s No. 11-B Settegast ..... Drlg. oil sand 3,694 ft.
Rio Bravo Oil Co.'s No. 13-A Settegast (workover) ..... Rigging up to work over.
Rio Bravo Oil Co.'s No. 18-A Settegast, west ..... Derrick.
Saxet Gas Co.'s No. 5 Herman (southwest) ..... Set screen 4,161 ft.; failed to flow; to deepen.
Saxet Gas Co.'s No. 6 Herman, southwest ..... Standing.
Saxet Gas Co.'s No. 7 Herman, southwest ..... Derrick.
Superior Oil Co.'s No. 3-A Whitehead ..... No report.

LIBERTY—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 11 Groggan ..... Started drilling.
Sun Oil Co.'s No. 54 Mitchell ..... No report.
The Texas Company's No. 5 Grain (workover) ..... Abandoned 3,317 ft.
Vacuum Oil Co.'s No. 1 Clarion, shallow pool ..... Drlg. sand 1,116 ft.

HULL—LIBERTY COUNTY

W. B. Flynn's No. 8 Harrison (workover) ..... No report.
Empire Gas & Fuel Co.'s No. 11 Barngrover (workover).. To deepen.
Empire Gas & Fuel Co.'s No. 31 Barngrover ..... Rig.
Ocean Springs Oil Co.'s No. 1-H Palmer ..... No report.
Republic Production Co.'s No. 57 Dolbear (workover) ... No report.
Republic Production Co.'s No. 122 Dolbear ..... No report.
The Texas Company's No. 1 Barrow fee ..... Location.
The Texas Company's No. 8 Hannah-Vacuum ..... Repairing derrick.

BIG CREEK—FORT BEND COUNTY

Benedum & Trees' No. 1 J. F. Ahlers ..... Derrick. Heaving shale 4,179 ft.; washing 3,950 ft.
Benedum & Trees' No. 1 Moore ..... Drlg. broken lime 1,762 ft.
Navarro Oil Co.'s No. 4 Hausler ..... Drlg. shale and lime 3,492 ft.
The Texas Company's No. 4 fee (workover) .....

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 9 Mayes ..... Drlg.; tested 2,668 ft.
Pure Oil Co.'s No. 10 Mayes ..... Rig.
Pure Oil Co.'s No. 4 Lost Lake ..... Total depth 1,170 ft.; sidetracked at 880 ft.

NASH—BRAZORIA COUNTY

Rycade Oil Corp.'s No. 26 Wisdom ..... Total depth 5,826 ft.; perforated casing 3,577-93 ft.; bailed water and mud.

SOUR LAKE—HARDIN COUNTY

Lake View Oil Co.'s No. 8 Minor ..... Drlg. 2,360 ft.
Gilbert Oil Co.'s No. 107 Gilbert ..... Derrick.
M. E. Peveto's No. 1 Merchant ..... Drlg. 1,096 ft.
The Texas Company's No. 305 fee ..... Drlg. sand 140 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 89 Cotton ..... Abandoned; total depth 1,044 ft.
Rio Bravo Oil Co.'s No. 89-A Cotton ..... Abandoned 583 ft.

GOOSE CREEK—HARRIS COUNTY

Humble Oil & Refg. Co.'s No. 77 Simms-Smith ..... Drlg. shale and shell 4,215 ft.
Jim McMurry's No. 4 Grace Addey ..... Rig.

WEST COLUMBIA—BRAZORIA COUNTY

Saxet Oil Co.'s No. 3 Hogg ..... Derrick.
The Texas Company's No. 24 Arnold ..... Drlg. sand and boulders 1,913 ft.

NORTH DAYTON—LIBERTY COUNTY

John A. Deering's No. 6 fee ..... No report.
Humble Oil & Refining Co.'s No. 1 Jamison, south ..... Drlg. hard sand rock 4,030 ft.
Harrison Oil Co.'s No. 1 Jamison ..... Drlg. shale 4,096 ft.
Harvey Smith's No. 1 Simmons & Brown ..... Rig.
The Texas Company's No. 1 Paraffine fee ..... Rig.

HIGH ISLAND—GALVESTON COUNTY

Gulf Production Co.'s No. 5-A Smith ..... Fishing drill stem 4,535 ft.
Marrs McLean's No. 12 Cade (workover) ..... Testing oil sand 4,312 ft.
Marrs McLean's No. 17 Cade ..... Set screen 4,311 ft.; bailed mud and sediment.
Tom C. Patten's No. 1 Jackson ..... Derrick.

ORCHARD—FORT BEND COUNTY

Gulf Production Co.'s No. 20 Moore ..... Drlg. sandy shale 3,152 ft.

DAMON MOUND—BRAZORIA COUNTY

L. & M. Oil Co.'s No. 5 Wisdom ..... Comp. flowing 500 bbls. oil 1,950 ft.; later showed 70 per cent water.

REFUGIO—REFUGIO COUNTY

Fox-Heflin's No. 1 Fannie Heard ..... Rig.
Hamil Drilling Co.'s No. 1 Cable ..... Location.
Herman F. Heep's No. 1 Vance ..... Rig.
Houston Gulf Gas Co.'s No. 1 Lambert ..... Cemented 5 3-16-in. casing 5,872 ft.; to test oil sand 5,890-92 ft.; total depth 5,895 ft.
Houston Gulf Gas Co.'s No. 2 Lambert ..... Drlg. sticky shale and gumbo 560 ft.
Houston Gulf Gas Co.'s No. 3 Cummings ..... Oil sand 3,637-51 ft.; cemented 8¼-in. casing 3,637 ft.
Houston Gulf Gas Co.'s No. 3 Morgan Shelley ..... Shut down 22 ft.
Houston Gulf Gas Co.'s No. 6 O'Brien ..... Gas sand 3,675-79 ft.; cemented 8¼-in. casing 3,674 ft.
Houston Gulf Gas Co.'s No. 9 T. P. Shelly ..... Reaming to set 8¼-in. casing; total depth 3,692 ft.
Houston Oil Co.'s No. 1 Rooke Hotel ..... Drlg. gumbo and lime 3,294 ft.
Houston Oil Co.'s No. 14 Rooke ..... Location.
Houston Oil Co.'s No. 1 Tom Heard ..... Drlg. gumbo 1,757 ft.
Houston Oil Co.'s No. 1 Carlysle ..... Drlg. sticky shale 2,190 ft.
Houston Oil Co.'s No. 1 Shelton ..... Rig.
Houston Oil Co.'s No. 1 Dorsey ..... Rig.
Independent Oil & Gas Co.'s No. 2-B J. F. B. Heard ... Blew out and bridged 3,666 ft.; temporarily abandoned.
Independent Oil & Gas Co.'s No. 1-C Heard ..... Derrick.
Independent Oil & Gas Co.'s No. 3 Claude Heard ..... Rig.
Independent Oil & Gas Co.'s No. 1 T. P. Shelley ..... Oil sand 5,487-88 ft.; cemented casing 5,481 ft.
Independent Oil & Gas Co.'s No. 1 Huddleston ..... Location.
Independent Oil & Gas Co.'s No. 1 Mercy Academy ..... Rig.
Independent Oil & Gas Co.'s No. 1 Helen Reilly ..... Cemented 8¼-in. casing 524 ft.
Independent Oil & Gas Co.'s No. 6 Reilly ..... Cored water sand 3,686-89 ft.; waiting orders.
Independent Oil & Gas Co.'s No. 3 West ..... Rig.
Edwin M. Jones' No. 1-A Leisering ..... Drlg. gumbo 2,914 ft.
Edwin M. Jones' No. 1-A J. F. B. Heard ..... Rig.
Edwin M. Jones' No. 1-A Mitchell ..... Location.
Edwin M. Jones' No. 1 Jeter ..... Cemented 10-in. casing 480 ft.
Larco Oil Co.'s No. 2 Strauch ..... Set screen in sand 3,671-3,706 ft.
Mission Drlg. Co.'s No. 1 Moss ..... Drlg. shale 1,847 ft.
Morgan & Morgan's No. 1 Rooke ..... Drlg. sandy lime 4,034 ft.
Morgan Oil Corp.'s No. 1 Swift ..... Cored water sand 3,707-11 ft.; plugged to 3,696 ft.
Morgan Oil Corp.'s No. 5 City ..... Drlg. rock 1,057 ft.
Morgan Oil Corp.'s No. 1 Hornburg ..... Oil sand 3,681-87 ft.; cemented casing.
Morgan Oil Corp.'s No. 1 Fox, Block 70 ..... Rig.
Morgan Oil Corp.'s No. 1 Tom Heard ..... Drlg. hard shale and lime 3,925 ft.
Morgan Oil Corp.'s No. 1 Carlysle, Block 2 ..... Drlg. sticky shale 2,495 ft.
Morgan Oil Corp.'s No. 1 Powers ..... Cemented 12½-in. casing 1,187 ft.
Pearson Properties' No. 1 Ryalls ..... Drlg. sticky shale 2,975 ft.
Ed Price et al's No. 1 Mission River ..... Drlg. gumbo and lime 1,303 ft.
Refugio Oil Corp.'s No. 1 Wheeler heirs ..... Tested salt water 3,675-87 ft.; pulling screen.
Saxet Oil Co.'s No. 2 Cable ..... Standing partly rigged.
Saxet Oil Co.'s No. 2 Ryals ..... Location.
Saxet Oil Co.'s No. 3 Holmes Heard (old well) ..... Drlg. gumbo 4,740 ft.
Sun Oil Co.'s No. 3 Buckley, Lot 5, Blk. 2 ..... Drlg. sticky shale 689 ft.
The Texas Company's No. 1 Shelton ..... Drlg. hard lime 5,145 ft.
Union Prod. Co.'s No. 2 O'Brien ..... Total depth 5,588 ft.; oil sand 5,554-68 ft.; set 4½-in. casing.
Union Prod. Co.'s No. 1 Tom Heard, Block 3 ..... Rig.
Union Prod. Co.'s No. 1 Ben Shelton ..... Tested salt water 5,513 ft.; pulling screen.
Union Prod. Co.'s No. 2 J. F. B. Heard ..... Oil sand 3,663-68 ft.; cemented 8¼-in. casing 3,658 ft.
Union Producing Co.'s No. 1-A Rose Lambert ..... Drlg. hard lime and gumbo 4,263 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co. & Gulf Refining Co.'s No. 25 Miller ..... Drlg. hard sand 3,583 ft.
Vacuum Oil Co. and Gulf Refining Co.'s No. 26 Miller ... Derrick.
Vacuum Oil Co. & Gulf Refining Co.'s No. 27 Miller ..... Derrick.
Vacuum Oil Co. & Gulf Refining Co.'s No. 8 Bordages ..... Drlg. hard sand 4,249 ft.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 1 Verdine ..... Drlg. 950 ft.
Calcasieu Oil Co.'s No. 5 Caldwell ..... Drlg. 1,000 ft.
Sunshine Oil Co.'s No. 6 Ellender ..... Derrick.
Rex Petroleum Corp.'s No. 1 Duhon ..... Bailed dry; standing.
Rycade Oil Corp.'s No. 1 Gulf Land ..... Rigging up to deepen 4,349 ft.
Rycade Oil Corp. and Humble's No. 5 Gulf Land ..... Dredging canal to location.
The Texas Company's No. 6 State, Calcasieu Lake ..... Cemented 20-in. casing 58 ft.

JENNINGS—ACADIA PARISH

Cline, Smith & Cline's No. 9 Conklin ..... No report.
The Texas Company's No. 5 Rayne heirs (King tract) .. Drlg. 6,542 ft.
Yount Lee Oil Co.'s No. 1 E. F. Simms (northwest side).. Drlg. shale 7,331 ft.
Yount Lee Oil Co.'s No. 8 Houssiere-Latrielle, Section 47-9s-2w ..... Drlg. 4,870 ft.
Yount Lee Oil Co.'s No. 6 Crowley ..... Rig.

EDGERLY—CALCASIEU PARISH

Drysdale-Savoy Oil Co.'s No. 2 Hill (workover) ..... Comp. as small pumper 3,164 ft.
Rex Petroleum Co.'s No. 1 Hunter ..... Rig.
Strange Oil Co.'s No. 1 Reed ..... Comp. pumping 50 bbls. oil 3,689 ft.
Strange Oil Co.'s No. 1 Koonce ..... Drlg. 3,726 ft.

VINTON—CALCASIEU PARISH

Marrs McLean's No. 4 Gray (workover) ..... Drlg. 2,067 ft.
Vinton Petroleum Co.'s No. 5 Matilda Gray ..... Pulled stuck drill stem 2,692 ft.
Vinton Petroleum Co.'s No. 6 Matilda Gray ..... Location.
Wilson Broach's No. 1 Vinton ..... To pump 3,365 ft.

BAYOU BOUILLON—ST. MARTIN PARISH

Rycade Oil Corp.'s No. 9 Bouillon fee ..... Drlg. gumbo 1,654 ft.
Rycade Oil Corp.'s No. 5 Atchafalaya fee ..... Drlg. sticky shale 3,691 ft.
The Texas Company's No. 2 St. Martin Land Co. ..... Drlg. hard sand 4,825 ft.

STARKS—CALCASIEU PARISH

J. O. Davis' No. 1 Industrial ..... Fishing 3,744 ft.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 8 Yount Lee (workover) ..... Drlg. hard sand 5,380 ft.
Pure Oil Co.'s No. 9 Yount Lee ..... Drlg. hard, sandy lime 3,530 ft.

ANSE LA BUTTE—ST. MARTIN PARISH

Yount Lee Oil Co.'s No. 1 Hebert ..... Drlg. shale 3,948 ft.

SORRENTO—ASCENSION PARISH

Gulf Refining Co.'s No. 17 United Land Co. ..... Drlg. 3,406 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Black Oil Co.'s No. 1 Lancashire, near Sealey ..... Drlg. gumbo 2,001 ft.
O'Hara et al's No. 1 Batla, near Raccoon City ..... Drlg. shale 3,150 ft.
McInnery et al's No. 1 McDay, west of Kinney ..... Shut down 328 ft.

BRAZORIA COUNTY

Mills Bennett Production Co.'s No. 1 Allen, Allen Dome.. Set 6 joints screen 4,999 ft.; comp. flowing 700 bbls. 41.3 gravity pipe line oil.
Faust et al's No. 5 Faust ..... Drlg. shale 3,597 ft.
Rucks & Patterson's No. 1 Hunter, southwest of Hoskins.. Shut down 735 ft.
Shell Petroleum Corp.'s No. 1 Blakely-Winston, Danbury ..... Drlg. shale 4,109 ft.
Pearl & Strickland's No. 1 Lockridge ..... Rig.
Word Drlg. Co.'s No. 1 Proctor, west of Hoskins Mound.. Drlg. shale 1,289 ft.

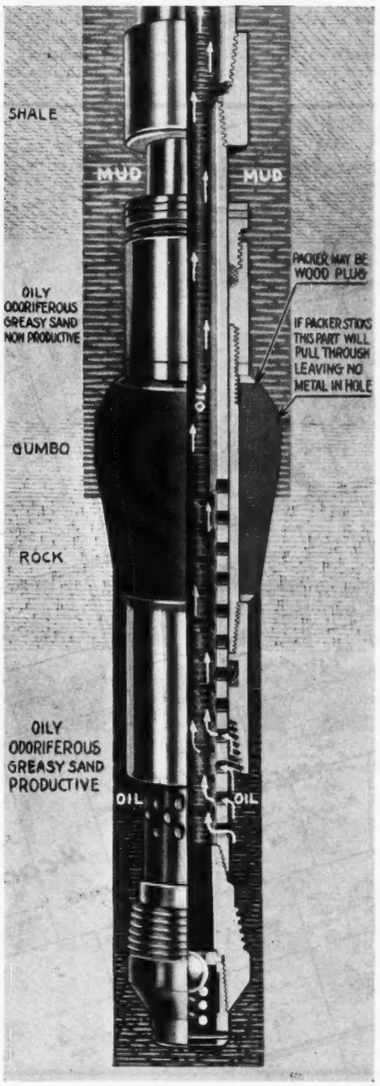
CHAMBERS COUNTY

Shell Petroleum Corp.'s No. 1 Herff, Moss Bluff ..... Moving in material.

FORT BEND COUNTY

Gulf Production Co.'s No. 1 Brazos Valley, Clodine ..... Drlg. shale 3,422 ft.
Pure Oil Co.'s No. 1 Jackson Brown, Barrett and Harris Sur. ..... Rig.

REPRESENTATIVES WANTED!



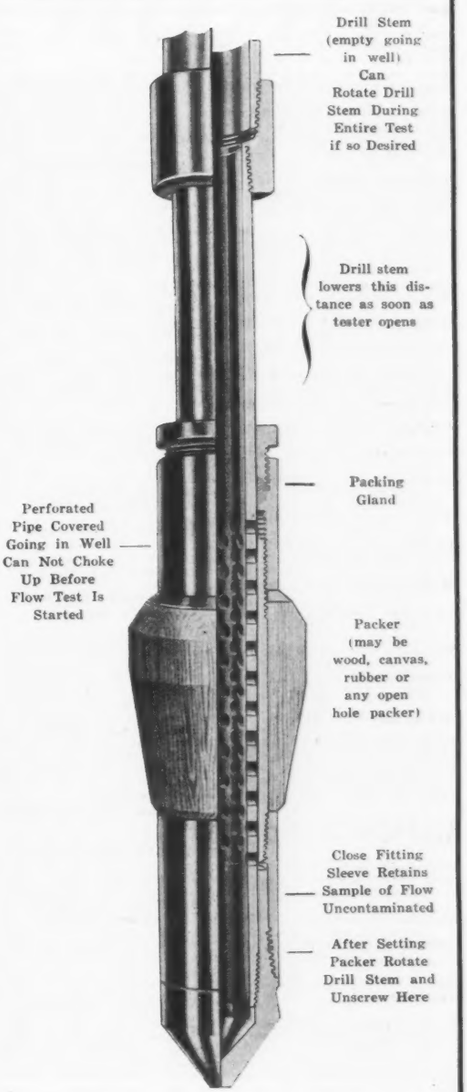
We are desirous of licensing reputable persons to represent us in the establishment of the

OIL WELL TESTING

business in the following foreign countries and under the following foreign patents:

Country	*Patent No.*
VENEZUELA	840
ROUMANIA	13150
INDIA	12498
MEXICO	26274
COLOMBIA	2213
GREAT BRITAIN	279175
FRANCE	596104
ARGENTINE	27810

Patents pending in other countries.


Drill Stem (empty going in well) Can Rotate Drill Stem During Entire Test if so Desired
Drill stem lowers this distance as soon as tester opens
Packing Gland
Perforated Pipe Covered Going in Well Can Not Choke Up Before Flow Test Is Started
Packer (may be wood, canvas, rubber or any open hole packer)
Close Fitting Sleeve Retains Sample of Flow Uncontaminated
After Setting Packer Rotate Drill Stem and Unscrew Here

We shall announce in the very near future a new policy in the United States, as we expect to manufacture a number of different sizes and types of TESTING DEVICES which will meet the demand of the trade as to price and patent protection.

Patent Application pending in the United States since February, 1926.

"WE WERE THE FIRST TO USE THIS METHOD IN THE TESTING OF OIL AND GAS WELLS"

ERLE P. HALLIBURTON CO.

DUNCAN, OKLA.

GRIMES COUNTY

Cranfill & Reynolds Oil Co.'s No. 1 Baylor, southeast Navasota ..... Rig.

HARRIS COUNTY

Baldwin and associates' No. 1 Kitzman, Cypress ..... **Shut down 4,055 ft.**
Buffalo Oil Co.'s No. 1 Beall, Eureka ..... Drlg. shale and gumbo 3,770 ft.
A. F. Belunek's No. 1 Thompson ..... Rig.
Cranfill & Reynolds' No. 1 Brown ..... Drlg. gumbo 5,810 ft.
Higgins Oil & Fuel Co.'s No. 1 Siadous, Mykawa ..... Drlg. sand and shale 5,061 ft.; set casing.
Humble Oil & Refg. Co.'s No. 7 Warren, Hockley ..... Drlg. hard shale 3,566 ft.
Humble Oil & Refg. Co.'s No. 2 Minnetex ..... **Standing with casing cem. 1,177 ft.**
Humble Oil & Refg. Co.'s No. 1 Siadous (workover) .... Total depth 4,906 ft.; cemented 7-in. casing 4,820 ft.
Humble Oil & Refg. Co.'s No. 2 Woodburn ..... Drlg. shale 4,838 ft.
Rich et al's No. 1 Highlands ..... **Derrick.**
Watts Brothers' No. 1 Hubert, Mykawa ..... Tested salt water 4,731 ft.; pulling screen.

JEFFERSON COUNTY

Gulf Production Co.'s No. 8 Bordages ..... Total depth 5,592 ft.; drlg. side-tracked hole 5,578 ft.
Gulf Production Co.'s No. 1-A Guy Junker, Fannett .... Drlg. 5,312 ft.
Gulf Production Co.'s No. 1-A Thomas, Fannett ..... Drlg. 2,548 ft.
Gulf Production Co.'s No. 13 Thomas, Fannett ..... Drlg. gumbo 1,386 ft.
River Oil Corp.'s No. 1 Ship Channel, Brown Survey .... **No report.**
Rosedale Oil Co.'s No. 1 Walker ..... Standing after testing salt water 1,649 ft.
Stilwell Oil Co.'s No. 1 Brinkman ..... Drlg. hard lime 3,246 ft.
The Texas Company's No. 2 Pipkin, Big Hill ..... Shut down 6,010 ft.
The Texas Company's No. 1 Fitzhugh, Big Hill ..... Drlg. 5,782 ft.
Westbury Oil Co.'s No. 1 West, Choate Survey ..... Drlg. gumbo 2,110 ft.

LIBERTY COUNTY

Campbell et al's No. 1 fee ..... **Rig.**
Gulf Production Co.'s No. 1 Weiser ..... Drlg. shale and lime 5,806 ft.
Gulf Production Co.'s No. 3 Boyt, Hankamer ..... Tested salt water 4,455 ft.; pulling screen.
Humble Oil & Refg. Co.'s No. 6 Sterling, Moss Bluff .... Shut in producer.
Cranfill & Reynolds Co.'s No. 4-A Esperson, Sheeks ..... Drlg. sandy shale 3,350 ft.
Cranfill & Reynolds Co.'s No. 6-A Esperson, Sheeks ..... Oil sand 2,304 ft.; cemented casing.
Cranfill-Reynolds Co.'s No. 7 Esperson ..... Location.
Cranfill & Reynolds' No. 2 Davis, Sheeks ..... Drlg. gumbo 1,610 ft.
Yount Lee Oil Co.'s No. 2 Moores Bluff, Sheeks ..... Drlg. hard sand and shale 6,370 ft.

MATAGORDA COUNTY

Cockburn et al's No. 1 Hawkins, Shepherds, Mott ..... Drlg. sand and shale 3,439 ft.

MONTGOMERY COUNTY

Kelley-Kaker's No. 2 Guergus ..... Location.

ORANGE COUNTY

Gulf Production Co.'s No. 1 J. E. Starks, Port Neches ... Drlg. 6,204 ft.
Gulf Production Co.'s No. 1 M. H. Starks, Port Neches ... Location.
The Texas Company's No. 2 Polk, Port Neches ..... Oil sand 3,141-46 ft.; setting 6⅝-in. casing.
Veteran Oil Co.'s No. 1 Reed, A. Nelson Sur. ..... Drlg. gumbo 4,550 ft.

WALLER COUNTY

Kirby Petroleum Co.'s No. 1 Davis, San Felipe ..... Drlg. gumbo 840 ft.; cemented casing.
W. P. Morris' No. 1 Chapman, Donoho Sur. ..... Shut down 1,867 ft.

SOUTH LOUISIANA

ASCENSION PARISH

Triumph Oil Corp.'s No. 3 Lacey, Sec. 20-10s-4e ..... **No report.**

ASSUMPTION PARISH

Gulf Refining Co.'s No. 1 Armilise, Napoleonville ..... Drlg. 4,278 ft.
Poor Boys Drilling Co.'s No. 1 LeBarre, Sec. 47-12s-13e .. Derrick.

CALCASIEU PARISH

Wilfred Lahay's No. 2 James ..... **No report.**

CAMERON PARISH

Shell Pet. Corp.'s No. 1 Marceaux, Mallard Bay, Sec. 32-12s-3w ..... Hard sandy lime 7,229 ft.; abandoned.
The Texas Company's No. 5 Calcasieu Lake, Calcasieu Lake Dome ..... Building derrick.
Vacuum Oil Co.'s No. 1 Cameron Meadows, Sec. 21-14s-13w ..... Started drilling.

IBERIA PARISH

The Texas Company's No. 4 Vermillion Bay ..... Drlg. rock 5,994 ft.

IBERVILLE PARISH

Shell Petroleum Corp.'s No. 4 Wilbert, White Castle .... Drlg. 1,012 ft.
Standard Oil Co.'s No. 4 Schwing, Bayou Blue ..... Rigging up.
Standard Oil Co.'s No. 5 Wilbert, Bayou Blue ..... Derrick.
Standard Oil Co.'s No. 6 Wilbert, Bayou Blue ..... Building derrick.
Standard Oil Co.'s No. 1 Case, Bayou Des Glaise ..... Drlg. 400 ft.

JEFFERSON DAVIS PARISH

Pure Oil Co.'s No. 1 May, Sec. 1-10s-5w ..... Drlg. sandy shale 2,816 ft.
Yount Lee Oil Co.'s No. 1 Courtney, Welsh ..... **Rig.**

LA FOURCHE PARISH

Gulf Refining Co.'s No. 25 Stark, Thibodaux ..... Drlg. salt 3,700 ft.
Gulf Refg. Co.'s No. 1 City of New Orleans, Bay Champagne ..... Drlg. 4,352 ft.

PLAQUEMINE PARISH

Humble Oil & Refg. Co.'s No. 1 Cockrell-Moran, Lake Grand Ecaille ..... Drlg. gumbo 1,615 ft.
Humble Oil & Refining Co.'s No. 1 Lake Washington, Lake Grand Ecaille ..... Waiting cement to set; total depth 4,260 ft.
The Texas Company's No. 3 Garden Island Bay ..... **No report.**
The Texas Company's No. 4 State, Garden Island Bay ... Location.

ST. LANDRY PARISH

Elbof Exploration Co.'s No. 1 Ledoux, Eunice ..... **No report.**
Herbert-Baker Oil Co.'s No. 1 Fisher, Section 10-3S-4e ... **No report.**
Gulf Refining Co.'s No. 1 Ovide Lahaye, Port Barre ..... Drlg. 3,416 ft.
The Texas Company's No. 4 Botney Bay, Port Barre ..... Oil sand 3,426 ft.; set casing.
The Texas Company's No. 5 Botney Bay, Port Barre .... Location.
The Texas Company's No. 6 Botney Bay, Port Barre .... Location.

ST. MARTIN PARISH

The Texas Company's No. 1 fee, Hager Dome ..... **No report.**
The Texas Company's No. 3 fee, Hager ..... Location.
The Texas Company's No. 2 St. Martin ..... See Bayou Bouillon.
The Texas Company's No. 1 Iberville, Hager ..... **No report.**

ST. MARY PARISH

Louisiana Land & Exploration Co.'s No. 2 Clark, Berwick .. No report.
Pure Oil Co.'s No. 1 Wax Lake, Sec. 12-17s-9e ..... Rigging.
Vacuum Oil Co.'s No. 1 Zenor, Patterson ..... Drlg. shale 2,224 ft.

TERREBONNE PARISH

Charles Paggi's No. 2 Evergreen, Sec. 145-15s-16e ..... Shut down.
The Texas Company's No. 4 State-Bay St. Elaine ..... Derrick.
The Texas Company's No. 2 La. L. & E. Co., Dog Lake .. Drlg. hard sand 5,977 ft.
The Texas Company's No. 2 State, Lake Pelto ..... Location.
The Texas Company's No. 3 State—Lake Pelto ..... Drlg. sandy shale 4,373 ft.
The Texas Company's No. 2 State—Caillou Island ..... Bailing 3,243 ft.
The Texas Company's No. 3 State, Caillou Island ..... Location.
The Texas Company's No. 3 State—Lake Barre ..... Drlg. rock 1,734 ft.
The Texas Company's No. 4 State, Lake Barre ..... Location.
The Texas Company's No. 3 L. L. & E. Co., Four Isle .... Location.

SOUTHWEST TEXAS

(Continued from Page 57)

tract and 1,500 feet southwest of No. 1 Dunn or (Saxet) discovery well of field; total depth, 3,385 feet; abandoned; salt water well; tearing down rig.

Magnolia-Cole Pool—Webb County

O. W. Killam's No. 17 Bruni, 458 feet southwest line, 328 feet northeast line, Block 35, Adams (Foltz) subdivision of A. M. Bruni lands, Survey 8, Mariano Arispe grant; total depth 2,369 feet; sand at 2,362-69 feet; tested salt water; abandoned.

Henne-Winch-Fariss Pool—Jim Hogg County

George S. Marshall's No. 4 Holbien, Share 3, Block 10, Survey 11, 150 feet south and west lines; temporarily abandoned. George S. Marshall's No. 5 Holbien, Share 3, Block 10, Survey 15, 150 feet north and west lines; temporarily abandoned.

NEW LOCATIONS

Darst Creek—Guadalupe County

J. S. Abercrombie and Harris Oil Co.'s No. 4 Thomas Dix, 300 feet north of No. 1, in the J. R. Robinson Survey; location. Same company's No. 5 Thomas Dix, 300 feet north of No. 3, in the J. R. Robinson Survey; location. Same company's No. 6 Thomas Dix, 300 feet north of No. 2, in the J. R. Robinson Survey; location.

Sun Oil Co.'s No. 5 Knoblock, 763 feet from southwest line, 150 feet from southeast line, in the J. R. Robinson Survey; total depth 1,200 feet; drilling.

Kohler Pool—Duval County

Allied Gas Co.'s (Pure) No. 2 Peters, 560 feet west line, 1,980 feet north line, Survey 161; derrick.

Cole Pool—Webb County

O. W. Killam's No. 18 Bruni, location being made.

Jennings Pool—Zapata County

O. W. Killam's No. 20 Cuellar, location being made.

R. F. Blankenship's No. 2 Montemayor, 820 feet east line, 150 feet north line, Block 7, Survey 64; spudded in.

DRILLING ACTIVITY

Dobrowolski Pool—Bexar County

Pen-Tex Oil Co.'s No. 1 Dobrowolski, 150 feet from south line, 150 feet from east line of west 67 acres of Dobrowolski 147-acre tract, in the M. Menchaca Survey; total depth 300 feet; drilling in shale.

Darst Creek—Guadalupe County

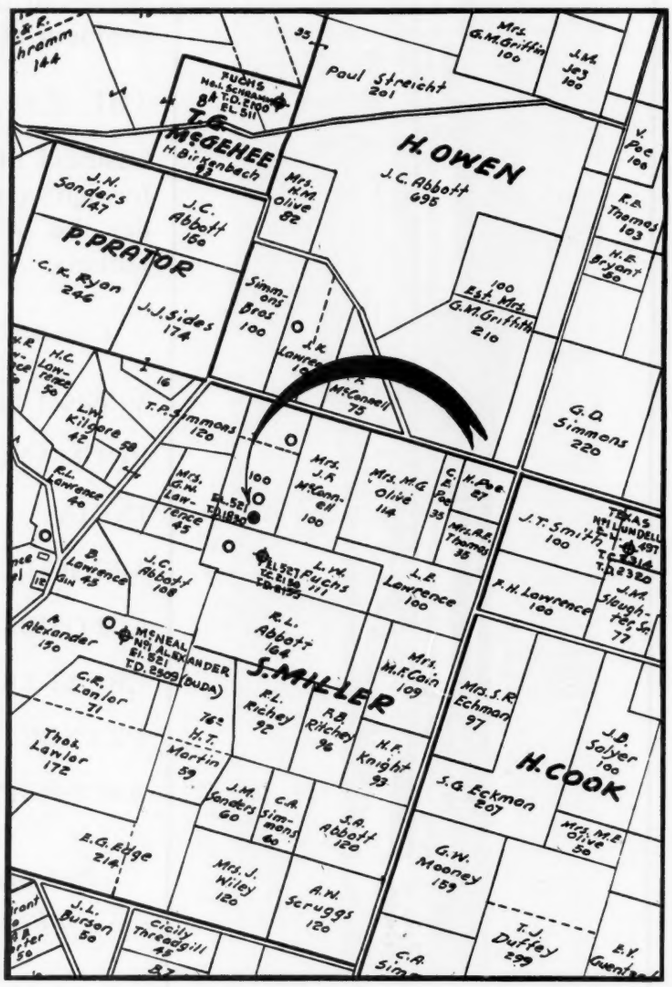
Cranfill-Reynolds' No. 1 R. C. Appling, 3,600 feet from southwest line, 2,700 feet from northwest line of survey on 111-acre tract, in the James Hodges Survey; total depth 2,813 feet; developed sulphur water; will plug back to 2,550 feet and shoot.

Buchanan Pool—Caldwell County

Buchanan-Danciger's No. 1 W. T. Cude, 150 feet each way out of southeast corner of 23-acre W. T. Cude lease; spudded in and shut down.

Gulf Production Co.'s No. 2 Thomas Dix, 473 feet southwest line, 150 feet southeast line of tract, in the J. R. Robinson Survey; total depth 2,330 feet; drilling in chalk. Same company's No. 2 Dix-McKean, 850 feet from No. 1, offset United North & South Development Co.'s No. 1 Dix-McKean, in the J. R. Robinson Survey; total depth 2,538 feet. set casing. Same company's No. 3 Dix-McKean (corrected location), 150 feet south of center of north line of tract, in the J. R. Robinson Survey; total depth 2,204 feet; drilling in chalk. Same company's No. 4 Dix-McKean, 450 feet northeast line, 150 feet southeast line of tract, in the J. R. Robinson Survey; total depth 2,590 feet; set casing. Same company's No. 1 Knoblock, in the J. R. Robinson Survey; total depth 2,366 feet; drilling in Buda.

Humble Oil & Refining Co.'s No. 1 Baker, in the J. C. Darst Survey, 150 feet north line, 183 feet west line of tract; location. Same company's No. 2 Baker, in the J. C. Darst Survey, 472 feet north line, 183 feet east line of tract; location. Same company's No. 8-A Denman, 650 feet north of center of south line of survey, in the A. S. Emmett Survey; total depth 2,550 feet; drilling in. Same company's No. 9-A Denman, 915 feet east of No. 7, 800 feet from south line of A. S. Emmett Survey, in the A. S. Emmett Survey; total depth 2,260 feet; drilling in chalk. Same company's No. 4 Sally Wilson, 500 feet



Williamson County, Texas, was brought into prominence in recent days by E. L. Chapman's No. 1 Abbott, in the Simon Miller Survey, which came in at 1,000 bbls. initial production at a depth of 1,830 feet. The map shows results of past exploration work in the district.

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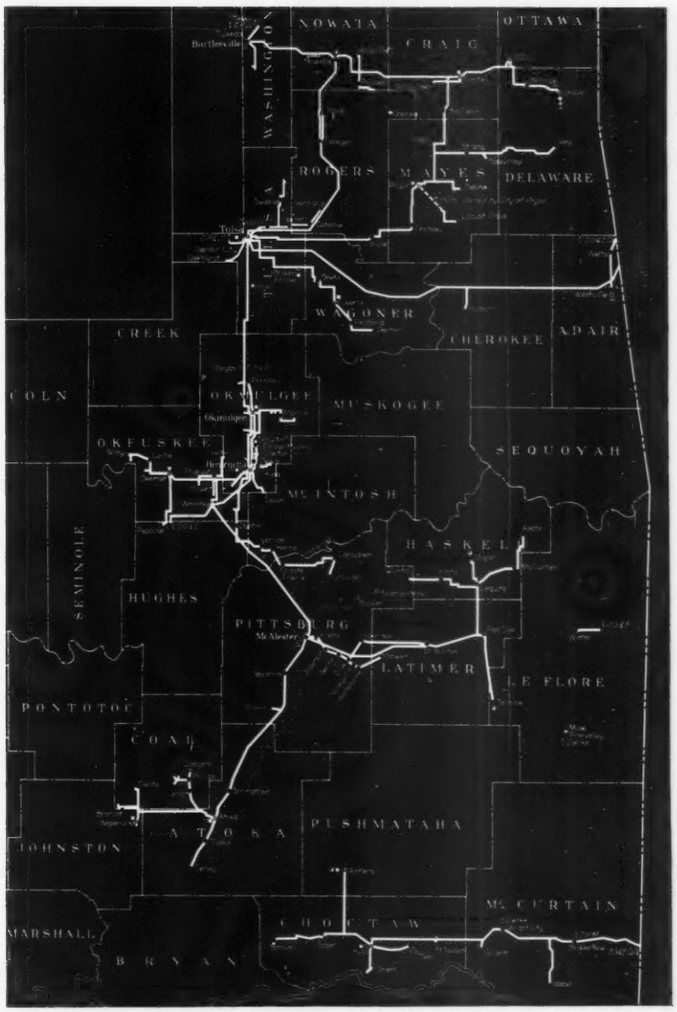

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east of No. 3, 2,150 feet north line of tract, in the Jacob Darst Survey; derrick. Same company's No. 1 Sally Wilson, in the J. C. Darst Survey, 150 feet from north line, 183 feet from west line; location. Same company's No. 1 Yates-Wilson, in the Jacob C. Darst Survey, 150 feet from north and west lines of tract; location.

Magnolia Petroleum Co.'s No. 6 Thomas Dix, 473 feet southwest line, 150 feet northeast line of tract, offset to Gulf's No. 2 Thomas Dix, in the J. R. Robinson Survey; total depth 2,140 feet; drilling in Taylor marl. Same company's No. 1 L. V. Echols, in the James Hodges Survey, 150 feet to northwest and southwest lines of farm, 3,650 feet to southwest, 3,220 feet to northwest of survey; total depth 2,715 feet; bailing little oil and sulphur water. Same Company's No. 2 L. V. Echols, in the James Hodges Survey, 150 feet to southwest and southeast lines of lease, 300 feet southeast of No. 1 well, 164½-acre tract; total depth 2,650 feet; drilling in Del Rio. Same company's No. 1 H. G. Goldman, 1,275 feet from northeast line, 150 feet from northwest line of farm, in the J. B. Alexander Survey; total depth 2,723 feet; set casing at 2,665 feet. Same company's No. 1 Annie Knodel, 150 feet each way out of northwest corner, in the J. R. Robinson Survey; total depth 1,800 feet; drilling in shale. Same company's No. 2 Rand Miller, 450 feet from northeast line, 150 feet from northwest line of tract, in the J. R. Alexander Survey; total depth 2,325 feet; drilling in chalk. Same company's No. 1 S. M. Roamel, 150 feet each way from southeast corner of 40-acre tract, in the James Hodges Survey; total depth 3,035 feet; drilling in Edwards. Same company's No. 2 S. M. Roamel, 150 feet each way from northeast corner of 40-acre tract, in the James Hodges Survey; location. Same company's No. 3 M. E. Roamel, 300 feet south of No. 2 well, 300 feet from northwest line, 400 feet northwest of No. 1 Appling producer, in the James Hodges Survey; total depth 2,535 feet; set casing at 2,465 feet; waiting on cement.

Simms Oil Co.'s No. 1 C. W. Manford, 300 feet southwest of No. 1, 225 feet from southeast line; location.

Stroubie & Stroubie's No. 2 Rand Miller, 150 feet south from No. 1, in the J. B. Alexander Survey; location. Stroubie & Stroubie's No. 3 Rand Miller, 150 feet south of No. 2, in the J. B. Alexander Survey; location. Stroubie & Stroubie's No. 4 Rand Miller, 150 feet south of No. 3, in the J. B. Alexander Survey; location.

Sun Oil Co.'s No. 3 Knoblock, 150 feet northwest line, 460 feet northeast line of 75-acre tract; total depth 960 feet; drilling in shale. Same company's No. 4 Knoblock, 150 feet southeast line, 460 feet northeast line; total depth 1,250 feet; drilling in sand.

The Texas Company's No. 2 L. Anderson, in the Jacob Darst Survey, 150 feet north and east lines; total depth 685 feet; shut down. Same company's No. 4 L. Anderson, 150 feet to south and east lines of tract, in the Jacob C. Darst Survey; total depth 2,624 feet; set casing. Same company's No. 2 Dallas Wilson, 150 feet south and west lines of tract; spudded in and shut down. Same company's No. 3 Dallas Wilson, in the J. C. Darst Survey, 150 feet north of center of south line; location. Same company's No. 5 Dallas Wilson, 150 feet from north and east line of the Dallas Wilson tract, in the Jacob C. Darst Survey; total depth 2,460 feet; drilling in Georgetown lime. Same company's No. 1-A Knoblock, 450 feet from northeast line, 150 feet from southeast line of A lease, in the J. R. Robinson Survey; total depth 1,600 feet; drilling in sandy shale. Same company's No. 1-B Knoblock, 150 feet from southeast line, 450 feet southwest line of B lease, in the J. R. Robinson Survey; rigging up. Same company's No. 2-B Knoblock, 450 feet from northeast line, 150 feet from northwest line of B lease, in the J. R. Robinson Survey; total depth 1,300 feet; drilling. Same company's No. 3-B Knoblock, in the J. R. Robinson Survey; total depth 2,350 feet; drilling in chalk. Same company's No. 2 Posey, 450 feet northeast line, 150 feet northwest line of lease, in the J. R. Robinson Survey; total depth 900 feet; drilling. Same company's No. 3 P. Roamel, total depth 1,250 feet, drilling. Same company's No. 1 S. M. Roamel, 150 feet northeast line, 150 feet northwest line of 100-acre lease; total depth 2,660 feet; drilling in Del Rio.

United North & South Development Co.'s No. 3 P. Roamel, in the J. R. Robinson Survey; rigging up rotary.

Pettus Field—Bee County

Union Producing Co.'s No. 5 George Ray, 1,750 feet southeast line, 250 feet northeast line of survey, in the Thomas Anson Survey, northeast offset to No. 1 McKinney, 3 miles northeast from Pettus; total depth 1,100 feet; drilling. Same company's No. 6 Ray, 1,300 feet east line, 750 feet south line of survey, in the P. Miller Survey, 1,200 feet southeast of gas well; total depth 4,425 feet; made drill stem test; showed 3 fourbles of oil sand and few gallons of oil.

Lasater Field—Brooks County

Houston Oil Co. of Texas' No. 1 Holbein-Wormser, in the Palo Blanco de Maguellas, 330 feet north line, 6,540 feet east line, direct offset 660 feet south of No. 1 Lasater; total depth 4,170 feet; killed well; drilling deeper; oil flow decreased and salt water increased in sand at 4,152-65 feet; reinstated workover.

Cartwright Pool—Live Oak County

Houston Oil Co.'s No. 2 J. B. Dunning, in the M. B. Kilvin Survey, 1,445 feet north of No. 1; total depth 4,495 feet; shut down; sand tested at 4,400 feet was dry.

Agua Dulce Field—Nueces County

Allied Gas Co.'s No. 1 Warren Chapman, 660 feet from the most northern and the western east line of said tract, south of Kerr lease; rigging up.

Nursery Field—Victoria County

Humble Oil & Refining Co.'s No. 3-A Jay J. Welder, in the D.I.&C. Survey, 1,634 feet southeast line, 736 feet southwest line, 1½ miles northeast from Nursery; total depth 5,896 feet; making about 4,000,000 feet of gas; spraying 10 bbls. high gravity oil; making salt water; killed well to deepen.

Cole Pool—Duval County

Magnolia Petroleum Co.'s No. 6 Servando Benavides, 330 feet northwest line, 380 feet northeast line, Block 7, Survey 174, O'Hern-Seacord subdivision; total depth 150 feet; drilling.

Kohler Pool—Duval County

Allied Gas Co.'s (Pure) No. 2 Peters, 560 feet west line, 1,980 feet north line, Survey 161; derrick.

Everett Suladie's No. 1 Peters, 165 feet south line, 230 feet west line, Survey 33; rigging up.

Allied Gas Co.'s (Pure) No. 4 J. T. Dinn, 1,500 feet south line, 1,500 feet east line, Survey 668; number changed from No. 1; rigging up.

Humble Oil & Refining Co.'s No. 41 Kohler, 2,970 feet south line, 330 feet east line, Survey 165; location. Same company's No. 42 Kohler, 495 feet south line, 165 feet west line, Survey 171; total depth 25 feet; drilling.

Simms Oil Co.'s No. 8 Dinn, 660 feet south line, 660 feet east line of SW SE, in Survey 143; total depth 1,700 feet; coring.

Schoolfield-O'Byrne—Duval County

C. E. Long (Shell) No. 5 Hahl, 150 feet north line, 630 feet east line, Block 26, Survey 250; location.

Randado Pool—Jim Hogg County

Magnolia Petroleum Co.'s No. 1 Weil, Block 2, Survey 5, 660 feet north line, 349 feet east line; total depth 2,983 feet; drilling.

Roma Pool—Starr County

The Texas Company's No. 1-B V. C. de Guerra, 150 feet south line, 150 feet west line of north 1,173 acres, Share 2, Porcion 68 of Partition Porcion 67-68-69-70-71-72, Jurisdiction of Mier; rigging up.

Carolina-Texas—Webb County

Foster-Barnsley's No. 7 Webster, Survey 684, 750 feet east line, 510 feet south line of NE SW of survey; total depth 2,612 feet; testing.

W. R. Shankle's No. 2 Webster, Survey 684, 1,170 feet west line, 150 feet south line; rigging up.

Magnolia-Cole Pool—Webb County

Magnolia Petroleum Co.'s No. 4 Brennen-Benavides, in the Mariano Arispe grant, corner Blocks 16-17-52-53, Myrtle E. Hale subdivision; total depth 3,080 feet; testing showing oil and gas.

Cole Pool—Webb County

E. H. Buckner's No. 1-A Rosa Benavides, 660 feet northwest line, 660 feet northeast line, Cole Petroleum Co. subdivision, Mariano Arispe grant, Block 5, Survey 14; rigging up.

W. E. May's No. 1 Volpe, 660 feet east line, 840 feet south line, Block 15, Survey 694; total depth 150 feet; drilling; set 10-inch casing at 100 feet.

Allied Gas Co.'s No. 1 Bruni, 200 feet southwest line, 450 feet northwest line, Mariano Arispe grant, Survey 7, Adams (Foltz) subdivision; total depth 2,269 feet; sand 2,260-63 feet tested 20,000,000 feet of gas, 396 pounds rock pressure; sand at 2,263-69 feet, 30,000,000 feet of gas, 700 pounds rock pressure; set 6⅝-inch casing 2,259 feet.

Magnolia Petroleum Co.'s No. 1 S. Perez, Survey 460, J. Poitevent, 1,980 feet north line, 660 feet west line; total depth 5,100 feet; drilling.

Magnolia Petroleum Co.'s No. 2 King-Harper, Block 2, Survey 323, 660 feet north and east lines; location.

Jennings Pool—Zapata County

O. W. Killam's No. 2 F. G. Martinez, 543 feet west line, 150 feet south line of SE. Survey 2; total depth 1,550 feet; drilling. O. W. Killam's No. 17 Cuellar, 600 feet north line, 940 feet east line of 160-acre Cuellar tract out of 1,772-acre Cerrito Blanco grant; derrick.

R. F. Blankenship's No. 2 Garza, Block 2, Survey 413, 425 feet west line, 425 feet north line; spudded in.

CALIFORNIA FIELDS

(Continued from Page 64)

6,914 feet. No. 168-E was finished with a 4¾-inch liner carrying 681 feet of perforated, while No. 146-C was completed with a 6⅝-inch liner including 140 feet of perforated.

George F. Getty's No. 37 Hill was another relatively small well as this former upper zone producer was only good for 885 bbls. daily upon recompletion in the Clarke zone several days ago. This project, which was bottomed at an even 8,000 feet, was finished with a 3-inch perforated liner carrying 720 feet of 100-mesh screen. The Italo Petroleum's No. 3 Brunson, a new well, also failed to register substantial production upon completion in the Clarke zone as it only showed an initial of 505 bbls. daily from 7,946 feet. No. 22 Walker of the Standard Oil Co. tanked 300 bbls. during the initial 24-hour test following completion at 7,560 feet.

In Same Category

The Star Petroleum's No. 2 Springs is another project in the same category, although this well was finished in the O'Connell zone at 6,250 feet. It is being listed as a 450-bbl. well, the hole having been plugged back to 6,190 feet. No. 2 Lamb of the Third Twin Bell Syndicate tanked 495 bbls during the initial 24 hours following completion in the Clarke zone at 8,068 feet. No. 2 Crawford of the Wilshire Oil Co., another relatively small well, was only good for 790 bbls. daily from 7,955 feet. No. 2 Koontz of the same company, on the other hand, registered an initial of 1,625 bbls. from 7,745 feet.

Only two substantial completions were recorded in this field during the last week. These were No. 9 Dewenter of the Associated and the Mohawk Oil Co.'s No. 5 Hathaway. The former was the outstanding completion, as this new well was brought in under a natural flow doing 3,185 bbls. of clean 33.8 gravity pipe line oil and 10,600,000 feet of wet gas daily from 7,925 feet. This well was finished with a 5-inch oil string carrying 458 feet of perforated. The Mohawk Oil Co.'s No. 5 Hathaway, a former upper zone producer, was returned to production flowing 2,145 bbls. of clean 33.6 gravity oil daily from 8,065 feet.

The last well finished at Santa Fe Springs during the current week was No. 23 Slusher, a new well of the Shell Oil Corp., which was swabbed in flowing 435 bbls. daily from 7,930 feet. There were several new wells in the oil sand in the Santa Fe Springs Field at the present time and many of them should be completed in the near future. Included in this group is No. 1 Mayberry of the Richfield Oil Co., with oil sand in the bottom of the hole at 8,316 feet. This is one of the most important wells under way in this field at the present time as it will extend the productive limits for a considerable distance north if substantial commercial production is developed.

Long Beach

The extreme eastern and western ends of the Long Beach Field continue to hold the attention of operators and these two sections will occupy prominent places in the spotlight during the next several months owing to development work still under way. Several new wells were started this week and others are being rigged up preparatory to an early spud.

In the Los Cerritos area, located in the western end of the field Allen Brown is rigging up rotary equipment over an old abandoned hole preparatory to carrying it down to the 7,000-foot level for production. The project in question is No. 1 Norwood, abandoned several years ago by Nard & McNeece at 4,878 feet. Higgins Brothers have just set a string of pipe in their No. 1 Signal after having drilled through several hundred feet of oil sand. This well is located in close proximity to Allen Brown's present development.

There are promising drilling projects under way in the eastern end of the field and additional completions may be expected from time to time. The Petroleum Securities has encountered oil sand in No. 1 Graham in this section and it should be an early completion. Bixby & Adams, Petroleo Syndicate and The Texas Company also have promising wells under way in the east and southeastern end of the field.

Two wells were put on production at Long Beach, the larger of which was No. 17 Haas of the Richfield Oil Co. This new well came in under a natural flow doing 1,140 bbls. initially from 8,007 feet, the hole having been finished with a 5¾-inch oil string carrying 1,005 feet of perforated. No. 26 Municipal of the A. T. Jergins Trust was good for 645 bbls. initially from 8,303 feet, the hole having been finished with a 6⅝-inch oil string carrying 1,993 feet of perforated.

Two new wells were put on production in the town lot section of the Potrero Field. The Whittier, Potrero Association's No. 1 Townsite was completed flowing 395 bbls. of clean 40.3 gravity oil daily from 4,872 feet, while the Sunset Pacific Oil Co.'s No. 2 Inglewood Community was good for 100 bbls. per day from 5,065 feet.

Midway-Sunset

No new wells were finished in the Midway-Sunset Field of Kern County in the last week but several potential producers are nearing completion out in the Maricopa Flats and they should be tanking oil within the next 15 days. In the Mount Poso Field the Union Oil Co. completed No. 9 Tribe, a new well pumping 98 bbls. of 16.5 gravity oil initially from 1,796 feet. Out in the west front area of the Kern River Field the General Petroleum finished No. 14 Whetmore doing 242 bbls. per day on the beam from 2,040 feet. The Belridge Oil Co. has recemented the string of 8⅝-inch landed in its well No. 15, a deep test in the Belridge Field of Kern County and this project, which has created so much interest, will be given an early test.

The Belridge's well, located in Section 26-27-20, has encountered a possible productive horizon similar to that producing in the prolific Kettleman Hills Field of Kings County. The well in question is bottomed at 5,088 feet and will be of extreme importance if the company duplicates the performance of the Milham Exploration Co. in opening up a new high gravity sand. The Belridge Oil Co. controls practically 50 square miles in the Lost Hills and Belridge Fields, although

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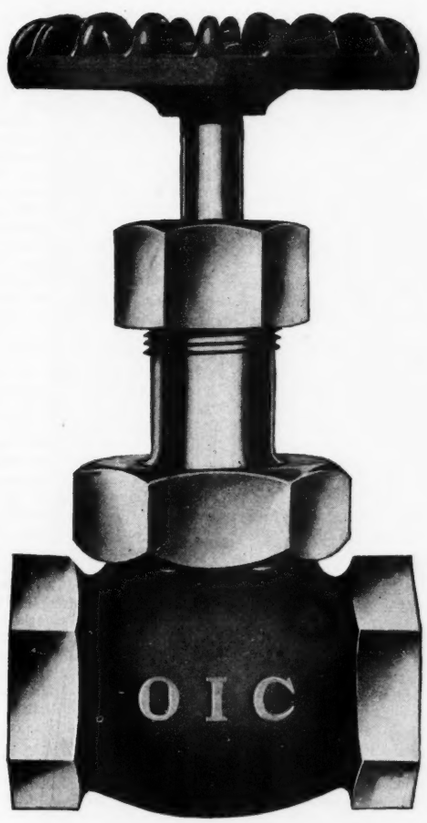

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it does not by any means control the entire productive acreage.

The Richfield Oil Co., General Petroleum and several other operators will be vitally affected. The acreage in this area is held in fairly large blocks by conservative operators and will consequently be free of competitive drilling. The Union Oil Co. has two leases located within a few thousand feet of the Belridge Oil Co.'s present deep test and will consequently profit by any discovery made.

The Union acquired another 132 acres in the North Belridge area this week and this new property gives the company an aggregate holding of 1,200 acres of leases and fee-owned land adjacent to the deep test now under way. The Union's latest acquisition was leased from Herbert Fleishhacker, prominent San Francisco capitalist. The lease in question is located in Section 34-27-20.

LA.-ARK. FIELDS

(Continued from Page 53)

Tiller in the James Story Survey, total depth 3,088 feet.

J. S. Herkness' deep test in Monroe, No. 12 Bowles, Section 18-20-5, Morehouse Parish, made a dry drill stem test of 4 feet of broken lime and shale at 2,385 feet, topped anhydrite at 2,412 feet and is drilling at 2,485 feet.

New Process Carbon Co.'s No. 2 Cole, Section 35-20-4, Ouachita Parish, plugged back from 2,857 feet where it was dry in 8 feet of sand after a similar test of 10 feet of sand at 2,810 feet, is arranging to test at 2,175 feet where it was making an estimated 10,000,000 feet of gas while drilling. Union Gas Products Co.'s No. 1 Hare, Section 22-19-5, Ouachita Parish, topped anhydrite at 2,376 feet, was dry at 2,406 feet and is drilling in the red beds at 2,482 feet. United Carbon Co.'s No. 2 Puckett, Section 15-19-5, is drilling at 2,432 feet.

The only development of particular interest in Richland was Arkansas-Louisiana Pipe Line Co.'s No. 1 A. E. Purvis, Section 34-17-6, which staged a blowout estimated at 63,000,000 feet of gas from 2,450 feet which sent the liner through the crown block and knocked it off carrying part of the derrick along with it. However, it was closed in successfully.

CANADIAN FIELDS

(Continued from Page 58)

No. 23, NW, Section 31-19-2w5, is also a small producer at 5,331 feet. Royalite's No. 12 has returned to the drilling category, and is rigging up to deepen from 5,419 feet.

Royalite's No. 4, Section 7-20-2w5, the oldest deep lime producer in the Turner Valley, has come back into partial production and is making around 200 bbls. a day. J. H. McLeod, production manager of Imperial Oil, Ltd., states the performance of Royalite's No. 4 should not be held as an indication that the field's life is restricted. No. 4, which came into production in October, 1924, has two strings of tools in the hole. The old casing has gradually settled making the channel of production much smaller and more susceptible to freezing. No serious trouble was experienced till late last summer, after nearly five years of continuous production averaging 500 bbls. a day. Since then the yield has declined, being around 40 bbls. a day in January.

South Turner Valley

In South Turner Valley, two additional tests have got the deep lime, both in Section 20-19-2w5. Calmont Oils' No. 2, LSD 11, is cementing 5¼-inch casing at 4,843 feet after getting the lime at 4,821 feet. This is several hundred feet higher than the adjacent Home and Associated wells. In LSD 5, Alberta Pacific Consolidated's No. 2 got the lime at 5,164 feet and is cementing 6¼-inch at 5,182 feet. This, after deducting recent completions, maintains the previous total of 17 Turner Valley wells drilling in the lime.

Mill City Petroleums' No. 1, LSD 14, Section 4-19-2w5, is drilling in the lower Fernies at 4,405 feet, with some gas coming from the Dalhousie sand.

East Crest Oil Co.'s No. 1, LSD 5-6, Section 16-19-2w5, is unloading and rigging up diamond drill equipment to resume in the lime at 4,412 feet. East Crest's No. 2-A, LSD 4, 75 feet south of the abandoned No. 2, is working on cellar. Commonwealth Petroleums' No. 2, LSD 7, Section 9-19-2w5, is still testing in the Dalhousie sands and looks like a very small producer.

Alberta Superior Oils' No. 1, LSD 5, Section 21-19-2w5, is resuming at 65 feet. Vanberta Oils' No. 2, LSD 5, Section 34-18-2w5, has spudded in with standard tools, Union Drilling Co. having the contract.

Central Turner Valley

In the Central Turner Valley, McLeod Oil Co.'s No. 5, LSD 16, Section 1-20-3w5, is drilling at 2,621 feet. The four McLeod wells in LSD 16, are all on production and no cleaning operations will be undertaken at present. No. 3, which recently blew back into production, is reported making 66 to 70 bbls. a day. Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, is rigging up diamond drill to clean out hole to restore production. Okalta's No. 3, LSD 9, is reported to have got a heavy gas flow in the Home sands at 3,430 feet, and has suspended drilling to move back the boilers.

Structure Oil & Gas' No. 1, LSD 7, Section 31-19-2w5, is drilling 12½-inch open hole in the Dakotas at 2,540 feet and taking some light crude production, around 5 bbls. a day, while drilling.

North Turner Valley

In the North Turner Valley area, Model Oils' No. 1, LSD 8, Section 22-20-3w5, is on top of the lime at 5,795 feet and drilling. This test is half a mile southwest of Foothills Oil & Gas Co.'s No. 1, which got the lime at 5,353 feet and secured production at 5,914 feet. Model's No. 1 will determine the advisability of making further tests in the north end on the extreme west flank of the structure.

New Black Diamond District

In the New Black Diamond area, west of the Turner Valley, operations are practically at a standstill. Last fall, Outwest Petroleums' No. 1, LSD 5, Section 35-19-3w5, encountered a fault thrust, and discontinued drilling at 3,625 feet. Following this Roselite Oils' No. 1, Section 27-19-3w5, at 1,010 feet, Vanberta Oils' No. 1, Section 35-19-3w5, at 700 feet, and Vanguard Oils' No. 1, Section 34-19-3w5, with test partly rigged up, all discontinued work. The only remaining test, Weymarn Petroleums' No. 1, LSD 1, Section 3-20-2w5, continued drilling, but at last reports had a fishing job at 3,605 feet.

Announcement has been made by P. Von Weymarn, president and managing director of Weymarn Petroleums, Ltd., that his company intends to continue drilling for a thorough deep test of the structure, which, since the fault was encountered in Outwest's No. 1, has been given thorough geological examination. At 2,160 feet Weymarn's No. 1 logged coal directly from the lower Benton. Assuming it was the usual coal seam marking the top of the Kootenay, its early appearance was interpreted as evidence of a fault west of the well and that this fault had entirely cut away the lower Benton and entire Blairmore formation. Later on the test again logged coal. Dr. T. A. Link and P. D. Moore of the Imperial Oil, Ltd., geological staff, then identified the first coal marker with the Belly River coal outcrop east of the well, explaining the condition as a thrust eastward along a very gentle westward dipping plane. Dr. G. S. Hume of the Geological Survey confirmed the view that below the first coal marker the test entered the Belly River series. The same development occurred at Outwest's No. 1.

This promised exceedingly deep drilling if the lime was to be reached. The stratigraphical thickness from the top of the Belly River, encountered at 2,160 feet, to the top of the lime formation is around 5,200 feet, indicating a total depth to the top of the lime of 7,360, so that around 8,000 feet of drilling would be required to get the crude naphtha horizon. Mr. Von Weymarn summarizes the geological conditions as follows:

"Data now available indicate that the dislocation of the beds encountered at Weymarn's No. 1 and Outwest's No. 1 occurred along a place which coincides with the top of the Belly River just above the coal seam, and that this plane had a gentle dip westward, so that the movement along this plane may be considered as practically a lateral movement. Attention must be drawn to the fact that stratigraphically lower than Belly River laying formations, the Benton and Blairmore are found to be placed above the Belly River. It is obvious that the abovementioned sliding along the top of the Belly River could not be the only movement which caused the underlying strata to occupy a stratigraphically higher position.

"This could not occur without a sharp folding of the beds (recumbent or upturned fold) or a vertical displacement along a plane intersecting the Belly River formation and breaking its continuity. The latter movement could, of course, occur either as an upward movement of the western part of the area in question or as a downward movement of the eastern part.

"As there is no evidence of an overturned (recumbent) fold, the necessary dislocation of the beds must have occurred in the form of a vertical displacement, west of the well. This means again that there are structurally and stratigraphically different conditions west of the fault and east of it. They depend first of all upon the amount of the throw, the position of the fault and the direction and angle of the fault plane.

"The amount of the throw is considerable but with the insufficient data on hand it can be estimated only approximately, and it is not less than about 2,500 feet. The position of the fault on the surface can be roughly located as being somewhere between the wells on one side and the first outcrop of the Belly River formation west of the wells on the other side, and is masked by the subsequent movement of the Benton shales. As to the direction and angle of dip of the fault plane, there can be two possibilities. Either the fault plane is dipping westward and, of course, in an angle larger than the angle of dip of the 'slide plane,' as they have to intersect; or the fault plane is dipping eastward (a tensional or normal fault).

"In the first case (a thrust fault) to reach the lime by the drill from any location across the New Black Diamond structure would be impossible except with a rig to drill down to 7,500 or 8,000 feet. But there will be still a possibilitiy that at a certain depth porous rocks of any formation may be encountered which are brought into contact with the oil-bearing limestone and are saturated with oil or wet gas, enough to yield a commercial production.

"In the second case, at a certain depth the tools may penetrate the fault plane, get out of the Belly River (or whatever it may be) and with the said amount of the throw, if this strike happens at the depth of about 4,000 feet, or lower, to strike the producing lime itself immediately on getting out of the fault, with all the effect of a sudden producer. It is not at all impossible that just the second case will happen—in fact, there are some indications in this direction and some arguments in favor of it. If the present test well will not give any positive result at a reachable depth, it would not mean that the structure is condemned. Another test on the outer west of it is self suggestive."

Drilling in the Foothills

On the Herron structure, Herron Petroleums' No. 1, Section 13-22-6w5, has resumed drilling in the Fernie shales at 1,275 feet after running casing to shut off water. Drilling started in the Dakotas, where some oil and gas shows were met, and it is planned to cement 12½-inch casing in the lime, which should be reached around 1,500 feet.

On the Pincher Creek structure, Weymarn Petroleums' No. 2, LSD 5, Section 7-6-1w5, is drilling at 635 feet. Weymarn's No. 1, originally started by Mount Royal Oil & Gas Co., was located in LSD 4. The steep dip of the formation at that point on the structure and the alternations of hard and soft formation resulted in a crooked hole; and after spending a lot of time getting this in shape, Weymarn Petroleums, Ltd., decided to let No. 1 stand at around 1,000 feet and start No. 2 on a more favorable location. No. 1 got two good gas flows and some traces of light crude.

In the Lundbreck area, southern foothills, Raven Oils' No. 1, Section 28-10-2w5, is moving in equipment for a test to spud in this spring. T. K. McNeil of Lethbridge has contract for derrick.

Red Coulee Field

In the Red Coulee Field, west of Coutts, Cosmos Oil Co.'s Hannah Porter No. 1, deepening below the Sunburst sand, is reported to have entered the Vanalta sand, oil rising 200 feet in the hole. The crude tests 33 Baume, a trifle higher than that from the Vanalta discovery well. In the Sunburst sand, which was a gas sand in Vanalta's No. 1 on the north end of the structure, the Cosmos-Hannah Porter well got a big rush of gas, around 10,000,000 feet a day, and later started to blow oil over the crown block. Then water started to come with the oil. No exact figures are available, but the well seems to have made about 1,000 bbls. of water and 250 of oil, though the water grew less as it was drilled deeper. After setting casing to shut off the water, drilling was continued to the Vanalta sand, lying between the Sunburst and the Ellis; but it is planned to take production from both the Vanalta and the Sunburst. Monalta Oil Co.'s No. 2 Buckley, further south, after a lot of fishing and casing trouble, is again drilling about 100 feet above the Sunburst sand. Mid-Continent Oil & Refining Co.'s No. 1, Section 2-37-4w, has increased its production from 100 to 120 bbls. from the Vanalta sand, and may make 150 bbls. when pumping equipment is fully adjusted. Mid-Continent's No. 2, just south of No. 1, has cellar dug and is working on derrick.

On the Alberta end of the structure, Vanalta Oils' No. 2, LSD 3, Section 4-1-16w4, is below 1,720 feet and drilling. Ko-Top Oils' No. 1, Section 2-1-17w4, is fishing at 1,650 feet. Hol-Gas Petroleum Co.'s No. 1, LSD 1, Section 11-1-17w4, has derrick up and equipment on the ground and will spud in this spring. Southern Alberta Exploration Co.'s No. 1, LSD 8, Section 3-1-16w4 is working on derrick and moving in equipment. Altamont Oil Co.'s No. 1, Section 28-1-16w4, is scheduled to spud in before May 1. Homestead Oils, Ltd., of Victoria, B. C., now drilling in the South Turner Valley, has secured 160 acres, NW Section 4-1-17w4, just north of Ko-Top's No. 1, and is planning to start development in the spring. Alberta Pacific Consolidated Oils, Ltd., of Calgary will drill a test in Township 1-16w4, offsetting Vanalta's No. 1 producer to the east. J. W. Elliott of the Elliott Drilling Co. has the contract. Capitol Oil & Gas Co. has secured acreage and will start a test in the spring.

In the Spring Coulee area, Alberta Pacific Consolidated's No. 1, Section 15-4-23w4, is moving in derrick timbers and building a 2-mile line to Spring Coulee to deliver fuel oil for drilling. Nordon Corp. has light drilling equipment on the ground for a series of structure tests on its Spring Coulee acreage.

Border Fields

On the Blood Indian Reserve, Commonwealth Petroleum, Ltd., is making two additional structure tests before finally locating its commercial well. Lethbridge Petroleum & Refineries, Ltd., has taken over 960 acres adjacent to the Commonwealth holdings from Benton Oils, Ltd., and will drill three additional structure tests on these new holdings.

On the Mowmac structure west of Lethbridge, Teapot Dome Oils' No. 5, Section 31-9-23w, has camp finished and derrick timbers on the ground for a test to spud in this spring.

In the Taber district, Cole English Syndicate's Taber No. 1, LSD 3, Section 11-10-17w4, is reported to have entered

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an oil sand around 3,400 feet. Casing will be cemented on top of the sand before the well is drilled into production. Storage tanks have been erected to handle possible production. The oil is apparently a green crude, and there is some gas, which is claimed to be wet.

At Stirling, Alberta, a syndicate is being organized to drill a test this spring on a structure near the town.

In the Oyen district, Fuego Oils' No. 1, Section 34-25-4w4, is preparing for a production test. Operations were held up some time waiting for casing to shut off a water flow around 3,163 feet, underlying the second oil show. As soon as the water was cased off, drilling resumed, and at 3,167 feet a further show of light crude oil, accompanied by gas, was encountered. This flow came from a horizon approximately 65 feet in the limestone. The well was shut in, but accumulated gas pressure dislodged the control head. A new control head is being secured preparatory to a production test.

Wainwright Field

In the Wainwright Field, a number of companies are making preparations to resume drilling. At present Onalta Oils' No. 1, LSD 8, Section 20-45-6w4, is the center of interest. This test at 1,925 feet unexpectedly struck a heavy gas flow, estimated 10,000,000 feet. The gas caught fire, destroying the derrick, and considerable equipment, with loss estimated at $15,000. Derrick is now being rebuilt. It is planned to shut off the gas and continue to the oil sand, expected around 2,245 feet. Onalta's No. 2 will be started as soon as No. 1 is finished. Bethwain Oils' No. 2, LSD 9, Section 4-45-6w4, is preparing to resume at 2,175 feet.

Ontario

In Kent County, Ontario, Basic Resources, Ltd., of Toronto, drilling on the Moraviantown Indian Reserve south of the Thames River, has secured a fair pumping production from its No. 1 well, which apparently marks a southerly extension of the Bothwell shallow pool. The location is about 2 miles south of the Bothwell Field, and on the opposite side of the river. It is reported that a test made after the strike indicated around 2 bbls. an hour, though settled production will likely be smaller. Basic Resources' No. 2 has started drilling about 100 yards from No. 1.

MICHIGAN FIELDS

(Continued from Page 62)

Of more importance than No. 2 McKay was the Wittmer Oil & Gas Properties' No. 1 Sarah Cashen, NW SW, Section 30-15n-3w, Denver Township, Isabella County, which came in as a 100-bbl. initial producer in the Dundee, topped at 3,600 feet, the pay at 3,636 feet and drilling was suspended at 3,650 feet. The well is a short distance east of No. 1 West, SE NE, Section 25-15n-4w, Isabella Township, Isabella County, which came in several months ago with an initial production of 30 bbls.

The same company's No. 1 Mary West, NE SE, Section 25-15n-4w, Isabella Township, topped the Dundee at 3,608 feet, had a show of oil at 3,648 feet and struck bottom water at 3,668 feet. It will be shot and an attempt made to produce it. The well struck a hard streak where the other two had given indications of opening a new field north of the city of Mount Pleasant and several miles northwest of the Mount Pleasant Field.

The Stork Oil Co.'s No. 5 Coon, NE NE, Section 12-14n-3w, Chippewa Township, Isabella County, was completed at 3,530 feet as a 60-bbl. producer.

One new permit was issued, for the Pure Oil Co.'s No. 5-B State-Isabella, NW SE Section 2-14n-3w, Chippewa Township, Isabella County, near the north edge of the proven field.

Muskegon Field

In the Muskegon Field the Blue Arrow Petroleum's No. 1 Alex Layman, SW NE Section 8-10-16, Muskegon Township, formerly the Bradley and Bradley well, was deepened from an original upper Traverse oil well into the lower Traverse gas sands. Gas pay was struck at 1,861 feet and the well was completed at 1,865 feet, making about 2,500,000 feet of gas and a spray of oil.

The Wego Oil Co.'s No. 2 John B. Nichols, NE NW Section 8-10-16, Muskegon Township, was drilled into the Dundee to make about 1,000,000 feet of gas and a spray of oil at 2,060 feet. The Reed Oil Co.'s No. 2 E. F. Plunkett, SE SE Section 8-10-16, made about 75 bbls. initial in the Dundee at 2,010-20 feet.

The Continental Gas & Oil Co.'s No. 20 on the City of Muskegon lease, SE SW Section 22-10-16, made about a 30-bbl. pumper in the upper Traverse at 1,724 feet. The Muskegon Development Co.'s No. 2 Fred W. Hartman, NE NW Section 9-10-16, had to be shot. It will be produced for oil from the upper and lower Traverse and will make about 12 bbls. on the pump.

Witt and Wyant's No. 8 Alfred H. Fenner, SW SE Section 11-10-17, Laketon Township, made about a 20-bbl. pumper in the Dundee at 2,060-65 feet.

Two Dundee wells in Laketon Township are being deepened: Reed Oil Co.'s No. 1 H. Young, SE NE Section 11-10-17, and the Johnson company's No. 10 John Thompson, SW NW Section 12-10-17.

The Blue Arrow Petroleum Co. has announced a new location for No. 2 T. Kooi, NW SE Section 8-10-16, Muskegon Township. The Johnson company is deepening its No. 1 L. Heinz, SW NE Section 9-10-16, an original Dundee gas well.

H. F. Gibson and F. Kirk Johnson of Fort Worth, Tex., and John Borden of Chicago, secretary-treasurer of the Old Dutch Refining Co. of Muskegon, have started a new wildcat in Geneva Township, Van Buren County. W. L. McClanahan is in charge of leases and G. E. Chapman, former geologist for the Dixie Oil Co., is geologist. A rig has been moved in for their first well, No. 1 John Kroeke, NW SE NW Section 23-1s-16w.

The Hillmur Oil Co.'s No. 1 Potter, NW NW Section 21-4n-2e, Locke Township, Ingham County, near Lansing, is dry and has been plugged at 2,635 feet. It had a show of oil and gas in the Traverse but ran into water. There was no show in the Dundee.

Oceana County is most active of any wildcat area in the vicinity of the Muskegon Field with four wells drilling. The former Oceana Oil Corp. well, SW NE Section 35-14n-17w, Shelby Township, near New Era, has recently been purchased by Charles Bates of Chicago, and is drilling at about 3,200 feet. Edward DuVall's No. 1 Schultz, NW NW Section 12-15-18, Golden Township, is drilling at 1,838 feet. The Red Rock Oil & Gas Co.'s No. 1 Skidmore, SW NE Section 19-15n-18w, Golden Township, is driving pipe at about 400 feet deep and expecting to land it within another 100 feet or more. It is a structure test. The North American Trust Co. well on the No. 2 Iroquois Oil Co. lease, NE NW Section 25-13n-17w, Grant Township, near Fruitvale, is getting started.

Newaygo County

There is only one active wildcat in Newaygo County, the Atlantic Exploration Co.'s No. 1 Brydges well, NW SW Section 12-11n-13w, Ashland Township, drilling at 3,000 feet.

Manistee County

Casing has been landed at 590 feet in the Swastika Oil & Gas Co.'s No. 1 W. H. Croamer, SE NW NW Section 34-22n-16w, Manistee Township, Manistee County.

Thompson Brothers are expecting to resume operations on the Diamond-Thompson-Holland No. 1 Lee A. Lewis well, NW SE Section 15-20n-17w, Grant Township, Mason County, southwest of Manistee, where they failed to get gas at 634 feet as in a well about 1,400 feet distant.

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SHREVEPORT, La., Feb. 15.—P. P. Stagg, district purchasing agent and warehouseman for the Gulf Refining Co. here for several years, died at his home after an illness of more than a month.

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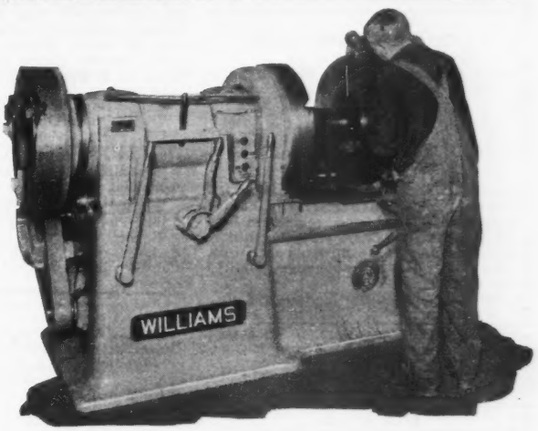

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Technical expert with experience in and capable of Design, Construction and Operation of carbon black manufacturing plants with experience in testing methods and apparatus and with knowledge of analytical methods of determining quality of carbon black suitable for various industrial applications. Must be willing to go abroad. Write full particulars. Answer Box E-111, The Oil and Gas Journal, Tulsa, Okla.

REFINERY SUPERINTENDENT
To take charge of small skimming plant for Company with established markets. Applicant must be thoroughly familiar with treating gasoline and kerosene. In answering give full details as to references, experience, salary expected and when able to report for duty. Write Box E-117, The Oil and Gas Journal, Tulsa, Okla.

POSITIONS WANTED

PURCHASING AGENT. With a background of 18 years experience in oil and gas engineering field work wishes to make a change. Engineering education and an experienced executive. Write Box E-68, The Oil and Gas Journal, Tulsa, Okla.

GAS ENGINEER with 18 years experience in all phases of oil and gas work, desires position as gas engineer or superintendent. Correspondence desired. Write Box E-67, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST: Ten years experience in consulting work. On account of heavy loss by fire seeking temporary or permanent position. Familiar with Kansas shale gas. Write Box E-106, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST: 15 years domestic and foreign experience, both company and independent, desires connection with future. Qualified for all types of work. Opportunity main consideration. References. Write Box E-105, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED
Gas Tester and Meter Man. Five years experience in Oklahoma and Texas. Mid-Continent field preferred. Capable of taking charge of Gas Department. Ten years previous experience as Civil and Mining Engineer. Write Box E-114, The Oil and Gas Journal, Tulsa, Okla.

REFINERY DESIGNER-DRAFTSMAN, three years refinery and several years structural experience, open for position. Write Box E-112, The Oil and Gas Journal, Tulsa, Oklahoma.

POSITIONS WANTED

ENGINEER, MECHANICAL and electrical executive, design, construction and operation desires connection with responsible concern. Write Box E-116, The Oil and Gas Journal, Tulsa, Okla.

INCORPORATIONS

CHARTERS—Delaware best, quickest, cheapest, most liberal. Free forms. Colonial Charter Co., Wilmington, Del.

DELAWARE incorporator. Charters fees small, forms. Charles G. Guyer, 901 Market St., Wilmington, Del.

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A COPY of A YEAR IN THE OIL FIELDS will be sent postpaid to any address for 50 cents. Write the author, J. L. Horlacher, Garden City, Kans., for publication.

MONEY RAISING

CAPITAL—An experienced, dependable broker will aid in financing propositions of merit. Amster Leonard, East Orange, N. J.

DO YOU NEED MONEY for organizing or financing oil or mining deals? Write 2443 N. W. 12th, Oklahoma City

FINANCE YOUR OWN project with shares bonded. Quickest, most satisfactory known method of raising capital. Information free. Bankers Interstate Security. Electric Bldg., Denver, Colo.

BULLETIN, containing information of priceless value to responsible parties seeking capital, yours upon request. Free analysis and advice cheerfully given. Moderate rates. Prompt. Service. Morris, Financing Specialist, 3608 Warren St., Philadelphia, Penna.

INQUIRIES SOLICITED FROM CORPORATION interested in raising capital through marketing of corporate securities.
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FOR SALE—MAPS

NEW MAP OF
MID-CONTINENT OIL FIELDS
Suitable for pocket or desk top, shows counties and producing areas in Oklahoma, Kansas, Texas, Arkansas, Louisiana and Eastern New Mexico. Postpaid for $1.
KELLY MAP CO.
P. O. Box 1773, Tulsa, Okla.

OIL DEVELOPMENT maps, any county in Oklahoma and west Texas. 75c each. State, county and district maps showing oil development. Lindsay Map Co., Franklin Bldg., Oklahoma City, Okla.

TOWNSHIP PLATS, Letterheads, Envelopes. Write for samples. R. D. Elliott, 5 N. First St., St. Louis, Mo.

ZINGERY OIL MAP CO.
Makers of famous Zingery abstract maps.
813 Throckmorton Ft. Worth, Texas.

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OIL FIELD LEGAL BLANKS
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Leases, assignments, releases, township books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

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REAL ESTATE

$10 MONTHLY acquires 5 acres pecans, figs, oranges. Cared for. Suburban Orchards, Dept. J, Biloxi, Miss.

BARGAIN—Farms central Oklahoma; prospective oil value. Write for list. E. M. Byers, 513 McBirney Bldg., Tulsa, Okla.

FOR SALE in Fee for less than we believe timber on land worth, 5,329 acres in body, 1,250 acres another body, and between near-by oil structures in Concordia Parish, Louisiana. Owner had land "wished on him" and is engaged in other business. $4.50 per acre if taken soon. Address Box 151, Bloomfield, Mo.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

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MAIL your advertisement now. It will be published next week. Cash with order.

LEASES—PRODUCTION

TEXAS LEASES 25 cents per acre and up in several interesting counties. Own over 75,000 acres. General Investment Company, 321 North St. Mary's Street, San Antonio, Texas.

NESS COUNTY, KANSAS, 7/8 Lease, 400 Acres 36-17-16w, near Continental Well. $25.00 per acre net.
516 Petroleum Bldg.,
Oklahoma City, Okla.

FOR LEASE—25,000 acres Prospective Oil Land in Coahuila, Mexico. Rights confirmed to owner by Mexican Government. S. R. Gonzales, Naranjo 2, Altavista, Tampico, Mexico.

OIL LEASES—In and around the fine productive oil fields of Texas. Will sell blocks of acreage of any size. If it is money that you want, get in touch with me. N. M. Bullock, Rockdale, Tex.

FOR SALE Oklahoma, Kansas and New Mexico 5 and 10-year oil and gas leases in large and small blocks. Also Oklahoma and New Mexico royalties. Robert O. Zielinski, 12836 Wood St., Blue Island, Ill.

FOR SALE. LEASES on Red Coulee Structure, Northern Montana and Southern Alberta's new sensational Oil Field. Many new wells to be drilled immediately. Field now in production. Write us for information.
NORTHERN INVESTMENTS
303 Alberta Corner,
Calgary, Alta.

MICHIGAN STATE LEASES

Oil and Gas leases on State Lands will be offered at public auction February 27 in the Senate Chamber of the Capitol Building, Lansing. 36,000 acres in Towns 21 & 22 North, Ranges 1, 2, 3 & 4 East, Ogemaw County; Towns 19 & 20 North, Ranges 3, 4, 5, 6 & 7 East, Arenac County; Town 21 North, Range 16 West, Manistee County; Town 16 North, Range 3 West, Isabella County; Town 15 North, Range 2 West, Midland County; Town 12 North, Range 12 West, Newaygo County. For list of descriptions, lease form, rules and regulations, write Lands Division, Department of Conservation, Lansing, Michigan.

60-ACRE LEASE, Van Structure, NE $7 per acre. ⅛ of landowner's royalty free. Tyler, 1130 Cedar Hill Ave., Dallas, Tex.

HAVE LARGE BLOCK OF ACREAGE under lease in Pa. which has been approved by one of Pa.'s practical geologists. Will give two or three blocks of 2,000 acre each or checker board throughout the field for a contract for the drilling of said wells, agreeing to sell me the gas. Unusual opportunity. For particulars address Box 256, Mansfield, Ohio.

BUY CHEAP LEASE and royalty in Western Oklahoma ahead of development. For particulars write George F. Fisher & Son, 607 Cotton Exchange Bldg., Oklahoma City, Okla.

COOKE COUNTY, TEXAS, LEASES
Five year leases one to three miles from well now drilling. Good geology. $3.00 to $8.00 per acre. W. R. Andrews, Box 7, Gainesville, Texas.

OFFER HALF INTEREST 600 acres with well drilled 850 ft. on top Mississippi lime for $2,000. Half mile to prolific new production. Write Contractor, Apt. 306, Northern Bldg., Wichita, Kansas.

FOR SALE—Oil and Gas Leases, shallow field, Anderson County, Kansas. New development started. Cash and drilling contract wanted. W. L. Morris, Garnett, Kansas.

160 ACRES, 10 YEAR LEASE, by Piedmont, Oklahoma, $50. Room 49, 314½ North Broadway, Oklahoma City, Okla.

LEASES—PRODUCTION

FOR SALE—25,000 acres, 10-year paid up leases, Uvalde, Edwards, Kinney, Bandera and Real Counties, Texas. No rentals. $1.35 per acre. L. W. Stieren, Alamo Bank Bldg., San Antonio, Tex.

WEST TEXAS mineral lands $2.50. Ten and twenty year leases, $1.25 and $1.50. Joe Cunningham, Big Spring, Texas.

FOR LEASE: Oil and gas rights on eleven hundred acres northwest of Stinnett in Hutchinson County, Texas. George B. Lucas, Austin, Texas.

I HAVE A DRILLING PROPOSITION that will interest you in the newest shallow sand oil and gas producing district of Western Kentucky. Write me for particulars. Joel Bailey, 310 Mercantile Bank Bldg., Evansville, Indiana.

SHOULD OPEN AN OIL FIELD
Have started operation for drilling on wonderful structure in Colorado near New Mexico line, that looks like a sure shot for oil. Have already moved in tools and completed 84-foot derrick, ready to spud in. If you are interested in some close-in leases, feel sure that $100 or $200 invested may make you a fortune. Will send full particulars on request.
Out West Investment Company,
Continental Oil Building,
Denver, Colorado.

WILL LEASE or consider drilling proposition on part the N and E Quarters of Sec. 34, Blk. 10, H. and G. N. Ry., Pecos County, Texas. The Texas Company has producing well adjoining Sec. South O. J. Perrin's 18 million foot gusher adjoining sec. West. Pecos Valley Pool about 3 miles west. Investigate first. Then write me. Owner, Louis Petersen, 1016 N. Heliotrope Drive, Los Angeles, California.

LEASES
On account cut in crude can sell some well located oil and gas leases in Blanco-Kendall - Uvalde - Kinney - Edwards - Val Verde Counties, Texas, 10 cents an acre and up. Also some royalties. Now is time to buy. Write Universal Agencies, 415 Moore Bldg., San Antonio, Texas.

INEXHAUSTIBLE GAS WELLS AT 300 FEET
For sale, 480 acres shallow gas leases in southeastern Kansas, practically proven, production guaranteed, best year-round market in Kansas, 11 cents per 1,000 cubic feet, low line pressure. Gas at 197 feet, 320 feet, and 580 feet already proven. Two more sands up to 860 feet. Long life sand gas wells and practically no decline to shale gas. Almost impossible to drill a dry hole. Address P. O. Box 533, Bartlesville, Okla.

LEASES
Ten Thousand Acres, Ten years paid up (no rentals) oil and gas leases, Edwards and Val Verde Counties, Texas, at 75 cents acre. Will sell part. A. C. Smith, P. O. Box 200, San Antonio, Texas.

WILL GIVE 5,000 acres of leases for a well to be drilled to 2,000 feet on well defined structure. Leroy Taylor, Box 1096, Seminole, Oklahoma.

WILL SELL ¾ working interest in 210 acre lease near discovery well, New Niagara, Henderson County, Ky., pool 60 days to start first well. Address Suite 9, No. 13,708 Madison Ave., Cleveland, Ohio.

WILL SELL NEW LEASE N. W., Quarter 7, 12N. 2 East, Lincoln County, Oklahoma. $4,000.00. 11 miles from Nicoma Park well and about 15 from Chandler field. Land unencumbered and on crest of divide field between Deep Fork and North Canadian. G. A. Minnich, Carroll, Iowa.

40 ACRE LEASE on well defined structure 1¾ miles S. E. of Gulf Well now drilling in Wood County. Price $15.00 per acre. L. D. Bertillion, Mineola, Texas.

OKLAHOMA DRILLING BLOCK
800 acres on well defined structure in Township 26-27 N., Range 3 W., Grant County. New ten year leases, Want Development.
L. A. Ferrel, Hennessey, Okla.

ROYALTIES—PRODUCTION

FOR SALE—Perpetual deeded oil royalty under major oil company leases, Lea County, N. Mex. Also five year state oil and gas leases, low rental, small investments, easy terms. Monarch Inv. Co., Roswell, N. Mex.

FOR SALE—ROYALTIES. Belcones Fault, L. W. Stieren, Alamo Bank Bldg., San Antonio, Tex.

STEVENS COUNTY and other Western Kansas Counties and Beaver County and other Western Oklahoma Counties royalties and leases.
Sain and Company, Liberal, Kans.

WINKLER COUNTY ROYALTY
Winkler Pool 1 acre or more east half Sec. 24, Blk. B-26, at $100.00 per acre. Perpetual Royalty.
Hobbs Pool, Lea Co., N. Mex.
Perpetual, participating. 1 acre or more at $50.00 per acre.
Masterson Pool, Pecos Co.
Perpetual Fee Royalty under 8 sections. Surrounding well at $50.00 per acre.
Robert E. Ellis, San Angelo, Tex.

NEW ROYALTY LIST. Van Zandt County, Texas; also Okla. and Kans. royalty. Harry Haynes, Grantville, Kansas.

ROYALTY INTERESTS, Van Zandt, Smith, Wood, Henderson, Anderson and Ector Counties, Tex. Lists and maps. James R. Haynes, Grantville, Kan.

WANTED—From owners only, Texas and Oklahoma small producing royalties. Give full particulars first letter. W. T. and C. C. Doyle, Southwestern Life Building, Dallas, Tex.

FOR SALE—OKLAHOMA COUNTY ROYALTIES. H. T. Orcutt, 1106 Colcord Bldg., Oklahoma City, Okla.

ROYALTY BARGAINS in Oklahoma, Lincoln and Pott Counties for sale. American Inv. Co., 201 Elks Bldg., Oklahoma City, Okla.

ROYALTY AND LEASES
Van Zandt County, Texas.
Caldwell and Holland,
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We Handle Oil Leases and Royalties.
RATLIFF AND CO.
630-31 Security Bldg. 3-7881; L. D. 594
Oklahoma City, Okla.

OIL
Play your money safe—$100, half cash, buys choice lot College Park addition to Oklahoma City. Warranted deed, full royalty under Buttram Petroleum Co. community lease. Write or phone for particulars. George Fisher & Sons, 607-8 Cotton Exchange Bldg., Okla. City, Okla.

WANTED—Oil Royalties, oil and gas production and acreage. Full particulars to F. Martin, 31 Fort Hill Circle, St. George SI. N. Y.

ECTOR COUNTY—4th well 1,500 bbls. Royalty interest $40 to $100, ¼ cash, balance monthly. C. H. C. Anderson, Linz Building, Dallas, Tex.

FOR SALE: 100 acres coal royalty; pays 15 cts. per ton, price $50 per acre. Development started.
Jasper N. Butler,
Poteau, Oklahoma

OIL ROYALTY for sale, seven-eighths Mineral Deed, 82 Sections Brewster County. Price $1.50 acre. Other Royalties, Leases. Box 244, San Angelo, Tex.

VAN ZANDT and East Texas Royalties, Leases under and near major blocks, $2 up. Inquiries invited. Lists. J. M. Ferguson, Box 1326, Fort Worth, Texas.

ROYALTY ACRE GYPSY BARKUS 125-A, 6-8-6, Seminole County; ten Wilcox wells producing 2,126 barrels, settled two wells, deepening one, new sand other drilling. 6,000 feet deepest test in area. Income $100 monthly. Unusual speculative play. R. E. Lowther, Jackson Bldg., Buffalo, N. Y.

COOKE COUNTY, TEXAS, ROYALTIES
One-fourth of owner's one-eighth royalty under 289 acres with well drilling on same. Very low price. All of owner's one-eighth royalty on 160 acres within quarter mile of well now drilling.
W. R. Andrews, Box 7, Gainesville, Texas.

ROYALTIES—PRODUCTION

PRODUCING ROYALTY WANTED

Want to buy small producing royalty interests anywhere in Oklahoma or Texas fields. Must be priced to sell and give full particulars as to location, income, etc. Address Box E-109, The Oil and Gas Journal, Tulsa, Okla.

HUDSPETH COUNTY, Texas. ⅛th Mineral Deed under 5,887 acres. Leased 10 yrs. 50 cts. rental. Price 20 cts. per acre. W. E. Priddy, Wichita Falls, Tex.

SEVERAL HUNDRED acres of royalty for sale in eastern part of Oklahoma County, Oklahoma. Advise me where you are interested. Shirley Thompson, Jones, Okla.

WE WANT good oil and gas royalties. Send us full information with reports. U. S. Royalties Corporation, C. A. Johnson Bldg., Denver, Colo.

Nearly $2,000,000 has been paid the Royalty owners in the Oklahoma City field during 1929.
I know the field, handle investments from $500.00 to $50,000.00 and solicit business from Individuals, Brokers, Investment Houses, and Royalty companies.

Maps and Data on Request.

W. M. GALLAGHER
Hersk Bldg.,
Oklahoma City, Okla.

RICE COUNTY ACREAGE
and close to Royalties for sale. Also interest in well and 3,000 acres. G. W. Moore, Independence, Kansas.

J. A. WOLF & COMPANY
127 N. Dearborn, Chicago, Illinois.
We deal in Oklahoma Royalties exclusively.

BUY ROYALTY. The royalty that sells for a few dollars today is the high priced production royalty of tomorrow. We have it at all prices. ELMER S. and FOX WOOD, 712 Herskowitz Building, Oklahoma City, Okla. Phone. 7-3514.

Results from consistent advertising in the right medium are accumulative. Use The Oil and Gas Journal Classified wants week after week.

BUY DEEDED OIL ROYALTY interest Oklahoma County. 1/640th of Landowner's 1/8th of ALL OIL under 10 acres—$8.00, 40 acres $25.00, 80 acres $50.00. Act quick. Full information. Joe Milam 205 Oil Exchange Building, Oklahoma City, Okla.

WE BUY AND SELL producing royalties, finance drilling propositions. Submit offerings with descriptions. J. A. Harrison, 423 Kennedy Building, Tulsa, Okla.

BEDROCK ROYALTY PRICES ahead of drilling on major company blocks. $6 per square mile. Perpetual deeds and title warranty. Clearly stated and understandable interests. See maps and bulletins. R. R. Fisk, Box 1214-B, Wichita Falls, Texas.

BUY ROYALTY UNDER 600 ACRES OKLAHOMA County located in 4 location under many different leases. Deed to 1/640th of Landowner's ¼th of all oil under 600 acres $375.00, 2/640th $570.00, 3/640th $1,125.00, 4/640th $1,500.00, limit buy to anyone, 10/64th $3,750.00. Full information write Milam Oil Investments, 204 Oil Exchange Building, Oklahoma City, Oklahoma.

AN EXPERIENCED, DEPENDABLE BROKER specializing Oklahoma City Field royalty offers excellent bargains. Joe P. Crawford, Petroleum Bldg., Oklahoma City, Okla.

GOOD ROYALTY PROPOSITION
We want Eastern representatives to handle good royalty proposition. Wood Petroleum and Royalty Corporation, 712 Herskowitz Building, Oklahoma City, Okla.

(ADDITIONAL CLASSIFIED WANTS ON NEXT PAGE)

Chicago Waiting to Judge Price Cuts

Business on Spot Market Very Quiet. Sellers Arguing Reductions Had Been Discounted and Buyers Simply Waiting

By J. B. Waldo

CHICAGO, Feb. 17.—Both buyers and sellers are unwilling to do business today until they have had time to measure more or less accurately the position of the market after the several changes in both the crude and tank wagon scales. The reduction in the price of Pennsylvania crudes announced this morning contributed to the uncertainty in the matter of lubricants. There was very little actual business except on contracts, the spot market for both light and heavy products being very quiet. The obvious intention of the refiners and other sellers was to hold prices claiming that the crude and tank wagon reduction had been discounted in the refinery tank car market. Buyers were simply waiting.

The general idea of the trade here was that the lighter products should hold at about current quotations and that if there was any change it would be in the heavier products. Distributors of furnace oils stated that they had received little additional business as the result of the day of zero weather last week and that the present demand was light with the return of mild weather. They state with almost no exception that they are not in the market for furnace oils having supplies either in storage or due on contracts which they expect will carry them through the cold weather. Refiners state that the present difficulty is to induce their trade to take out the oil which is coming to them. There was only a fair amount of inquiry for heavy industrial fuel oil. A little inquiry was noted by refiners for straightrun gas oil, presumably for cracking stock. The dealers in furnace oils are chiefly concerned at present in working off their stocks and will buy only for actual necessities from now on.

Local gasoline distributors report that Sunday was a fairly good day for gasoline sales but not as good as the previous weekend. Generally there was little change in this market from last week's conditions except that the reductions in prices which had been anticipated have been made and the trade is now waiting to judge the result of these changes on the prices of the chief products.

Buying for Storage

Last week was marked by gasoline sales for storage. The distributor does not give unnecessary publicity to the fact that he is ready to buy quantities to put away for the coming demand. He goes quietly to work to get the best material he can at the lowest price and the transaction comes to light after the sale is made. There were many such purchases in this market last week, running from 25 to 100 cars in most cases. One buyer thought so well of his purchase that after ordering 35 cars he came back with a second order for 25 additional cars. Many of the sales were made at prices that could not be duplicated at the close of the week, for the refiners who sold from storage at the bottom of the market advanced their quotations a fraction as soon as they had the needed relief. Small buyers who would have purchased a single car were induced to increase their order to two or three cars.

It has been estimated that there are some 120,000 filling stations in the country to say nothing of garages, wayside pumps and the like. There is bound to be an increase in the consumption. During the average year the August sales to consumers are approximately 70 per cent greater than those of January and the average increase in domestic consumption per month is just about 10 per cent over the preceding month. The stock of the average distributor is close to a minimum in January and the increase in the consumption forces each to carry larger supplies to meet the steadily growing demand. The great increase in the demand for gasoline at the refineries does not come from the individual purchase of some large distributor, but from the many small accounts.

Weather and Roads Control Consumption

The weather and road conditions really govern the use made of motors and the consumption of gasoline. One of the surburban garages is almost a perfect indicator of these conditions. When the conditions for driving are right, the garage is empty. But when the weather is unfavorable a glance would seem to show that not a car was out. Given a little better weather and clear roads the increased consumption will bring about a steady buying that will add greatly to the sales by the refiner.

Reports made by leading sources of information in the industry as well as from private surveys, show that there is no scarcity of gasoline. Stocks were large a year ago at this time and they are much larger today. Some refiners state that they are in good position as to present stocks. This is particularly true of the refiners in North Texas who have sold freely at going prices and have nearly clean tanks with business booked ahead according to their own reports. One of the heavy stocks of gasoline is held in California and the invasion of the eastern seaboard by gasoline from the West Coast promises to continue for the coming season.

What has been said regarding the purchases made to go into storage applies only to preparations to meet a future demand. Buying for the immediate demand was rather light last week and the spot market was dull with limited purchases of U. S. Motor gasoline. The prices during the first part of the week were easy and most spot sales were made at an average price of 5¾ cents, Group 3, for U. S. Motor gasoline. There were offerings of the 60-62 437 or "60-Navy" at the same price as asked for the U. S. Motor grade. There was some demand for the 400 endpoint at around 6⅛ cents while the demand for the 64-66 375 or 390 endpoint was just about steady in both quantity and the prices asked.

Prices Stronger After Crude Cuts

Prices were stronger later in the week after the crude cuts had been met by the major purchasing companies which had been holding out against making these lower prices for Mid-Continent crude. The explanation is simple, the trade figuring that the crude decline had been discounted in advance in the spot gasoline market and that any adjustment of prices, even service station and tank wagon, would make no difference with the consumption right now. The industry is back on the old basis of supply and demand.

Refined stocks are so ample that it is almost inconceivable the refining branch of the industry should not hold down its crude runs and draw against stocks. The tank wagon adjustment will reduce the jobbers' margin of profit, but if the contention is true that lower prices stimulate the demand, the gallonage of the jobbers should increase.

Another reason why greater strength should be expected in the market is that no refiner will increase his runs to have more gasoline to sell at less than the cost of refining. If for some reason a refiner is obliged to operate his plant he might be forced to move his gasoline at the best price obtainable but as soon as the demand increases it would seem to be only sane to advance the price to a profitable level before adding to the output.

The situation in Detroit where the tank wagon and the service station prices are the same, owing to a reduction of 2 cents in the station prices and 1 cent in the tank wagon price, has resulted in some improvement of conditions. Some of the distributors who had been selling at 2 cents under normal did not follow the prices down, and now are selling at the same price as the major companies. Distributors in that city assert that they have been offered gasoline as low as 8.08 cents delivered and even the largest refiners admit they cannot sell at 9 cents in Detroit at present.

Stocks Shipped by Tanker Last Fall

Large stocks of gasoline in storage in Detroit were shipped there by tanker last fall at a transportation cost of not to exceed one-quarter of a cent a gallon, compared with a freight rate from the Chicago district of .0165 cents per gallon. Detroit, Toledo and even Cleveland refineries are pushing westward for business. In fact the eastern portion of the Indiana territory is in more or less turmoil caused by the competition between plants to the east and to the west of the disputed territory as well as some local sources of supply.

Executives of some of the major integrated companies operating extensively in this territory who have not put in Ethyl Gasoline were asked if they had any intention of so doing. They said their premium gasolines are increasing in popularity with the public and show statements of large increases in distribution.

The kerosene movement is showing a steady increase but so far the price situation is unchanged. Some of the refiners assert that their stocks are light but at present there is no scarcity of material. The major refiners are content to hold their present spot prices which are as a rule from one-fourth to one-half cent above the going prices in this market.

"Splendid weather for gasoline but playing havoc with fuel oils," was the statement of a refinery sales manager last week. Bright skies and high temperatures marked most of the week. The result was a reduction of consumption of all fuels. Distributors did not want to buy anything even if short and many of them had more furnace oil than they knew what to do with.

Distillates Overrun

Distillates have been seriously overrun this season and are being offered cheaply to clear the refiners' tanks. Some excellent 40 gravity, prime white distillate has been offered at 3 to 3⅛ cents for local delivery, the product of a nearby plant but some high grade 38-40 Oklahoma material was offered by wire at 3⅛ cents, Group 3, and this reflects the position of the market for the large buyers, but even small accounts could get a good distillate as low as 3¼ cents. Zero gas oils have just about held their own but the new business is light, most of the distributors being stocked or receiving supplies by contract.

The lighter fuel oils suitable by their low flash and sweet odor for furnace fuel are in about the same position as gas oils, although the market is a little easier, some material being available in the 28-30 zero grade at $1.10 to jobbers or large consumers.

The gas companies are still not buying any large quantity of gas or fuel oil for the same reason that they have given all this season, not enough demand for industrial gas to oblige them to operate their water gas equipment. The demand for some of the by-products of coal gas is so excellent that at times some of the plants operate their coke ovens even if there is not sufficient demand for gas to use all that they produce. It is stored and if their storage is full they treat it as the old-time refiners did gasoline, run it off. A local refiner reports an inquiry for straightrun gas oil for cracking material and as others have received the same or similar inquiries, the market has a little more support with the prospect that more gas oil will be used for cracking.

Industrial Fuel Oils Stronger

The demand for industrial fuel oils is increasing and there are inquiries in the market for heavy fuel oil from plants which are advancing to the position where they will begin to operate, or will work on a large capacity. This is really the period when little new business originates but industries are usually busy with delivery on orders taken during the preceding fall. The financial excitement of last fall prevented the placing of the usual orders, at least to the usual amount and has caused many industries to wait before beginning their usual activity. But affairs have taken a turn for the better.

There is a noticeable tendency on the part of refiners to run heavier fuel oils. Only recently one of the Ohio plants which formerly had a 24-26 fuel oil of rather high cold test came out with two grades, an 18-22 and a 14-17 gravity, both with a low cold test and a low viscosity,

(Continued on Page 144)

Classified Wants

(Continued from Page 141)

ANNOUNCEMENT

C. E. LOEB SAVOY
Attorney-At-Law
1116 American Bank Building
NEW ORLEANS, LOUISIANA
announces the opening of a department specializing in the examination of Louisiana abstracts of title for oil operators, giving special attention to matters in escrow.

WANTED

DRILLING CONTRACT wanted for an interest in 10,000 acres on definite structure determined by geologist of wide experience. Leroy Taylor, Box 1096, Seminole, Okla.

WANT DRILLING CONTRACT
Culberson, Hudspeth, El Paso Counties.
Palm Milby, P. O. Box 247,
Clint, Texas.

CONTRACTOR WITH CABLE TOOLS in Southwest Texas desires contract not less than 1,200 feet. May take small part in acreage. Write Box E-115, The Oil and Gas Journal, Tulsa, Okla.

WANTED — A RELIABLE COMPANY or oil operator to put down a deep test well on structure in Wilson County, Texas. Max Huerlimann, Route 1, Box 45, Nixon, Texas.

PATENT ATTORNEYS

LOYAL J. MILLER
Registered Patent Attorney.
626 Insurance Building,
Oklahoma City, Okla. Phone 3-1743

REGISTERED PATENT ATTORNEYS
United States and Canada.
Before disclosing your invention to anyone, send for blank form,
Evidence of Conception.
Bulletin "How to Establish Your Rights" and complete information free.

LANCASTER, ALLWINE & ROMMEL
240 Ouray Bldg., Washington, D. C.

INVENTORS who derive largest profits know and heed certain simple but vital facts before applying for patents. Our book, Patent-Sense, gives those facts. Free. Write Lacey and Lacey, 577 F. Street, Washington, D. C. Established 1869.

Easiness in Eastern Gasoline Market

Other Refined Products Appear to Be Doing Rather Well Except Paraffin Wax. Cylinder Stocks Dull but Prices Hold

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NEW YORK, Feb. 17.—Easiness in the gasoline market has become more general throughout East Coast teritory this week, and tank wagon prices were lowered in New York and New England. The action of Sinclair and other purchasing companies in following Humble, Carter, and other Standard companies in reducing crude prices was a bearish factor, while price cutting on U. S. Motor gasoline in the refinery market was far from a constructive development. Aside from gasoline, however, refined products appeared to be doing rather well, barring a few minor reductions on paraffin wax. Cylinder stocks were dull, but refiners thus far have not lowered their asking prices for the oil.

Definite declaration by W. S. Farish, president of Humble Oil & Refining Co., in a statement to The Oil and Gas Journal last week that the crude price basis previously prevailing in the Mid-Continent would not be restored, followed by a lowering of posted price schedules by other purchasers, it is felt, will put the Mid-Continent and East Coast markets in better position to withstand California and South American competition. Whether the cuts in crude will be followed by reductions in gasoline prices is still problematical, as the crude reductions had been largely discounted by the falling market for refined products during the closing half of 1929, and thus far in 1930.

Export operators again reported a stagnant market for gasoline and kerosene at the Gulf, and the piling up of export grades has tended to further weaken the domestic situation. While there has been considerable speculation among independent operators regarding the possibility of a reduction of the posted price basis at the Gulf, such action in the near future is not considered likely. This situation leaves control of the market in the hands of the integrated companies with European and other foreign marketing subsidiaries or connections. California is still the center of interest in the export field, owing to the various rumors of low priced offering on the Pacific Coast.

Tank Car Gasoline

Leading refiners are maintaining the posted price basis at 8¾ cents at Bayonne, but considerable quantities are moving at 8½ cents and some business is reported at 8¼ cents in a few instances. A large contract, covering deliveries over the next five months, was reported to have been put through at 8¼ cents here. It was rumored that the contract called for delivery of 10,000 bbls. per month for five months.

Delivered prices at Boston, Mass., Tiverton, R. I., and Providence, R. I., were held at 10¼ cents for U. S. Motor, with the delivered price at Portland at 10¾ cents.

Bulk markets at Norfolk, Tampa, Baltimore, and other South Atlantic ports were posted at 8¾ cents in tank car lots.

California gasoline is posted at 9 cents at New York but this is a nominal figure, and sellers are freely shading to meet competition of other gasolines. Competitive conditions in Eastern gasoline markets at the moment are such that marketers of the California product are inclined to discount the antiknock qualities of their fuel in meeting competition.

There has been a moderately active demand in the refinery market, although rainy and cold weather has tended to retard consumption of motor fuel in many sections.

The principal development was the announcement by Standard Oil Co. of New York of a reduction of 1 cent for tank wagon gasoline. The cut was applicable to New York and New England, and brings the price for New York City down to 13.3 cents, exclusive of the state tax. The cut affected tank wagon prices only, and again restores the 2-cent margin between wholesale and retail prices. Other marketers operating in Standard of New York's area have met the reductions, which are the first to be made since the marketers recently adjusted their price policy to the basis of the Coast cargo market, plus freight and fixed differential.

Tank wagon sales are rather routine, demand having eased off somewhat owing to unfavorable weather conditions which have prevailed over the greater part of the area.

Kerosene

Refiners are holding the tank car market for water white firm at 7¾ cents, and a good volume is reported going through at that figure. Weather conditions this week have been favorable for heavy consumption, and jobbers have been operating in the tank car market in a fairly large way. Pennsylvania kerosene is still competing strongly in some sections where local refiners are at a freight disadvantage, but this situation is by no means general, and it does not appear that seaboard refiners will have much difficulty in holding their market at current levels.

Tank wagon kerosene sales have shown improvement and the market holds in steady position. The cut in tank wagon gasoline in New York and New England was not accompanied by a reduction in kerosene, prices of which remain at levels established on February 1.

Furnace Oil

Marketers reported some improvement in the demand for domestic heating oils, both tank car and tank wagon markets showing a considerable gain in volume. Prices were firmly held in both the wholesale and tank wagon markets. The bulk of the current movement, of course, is against seasonal contracts, but there was an increasing amount of spot interest shown.

Many jobbers, who had permitted their storage stocks to run down, have been in the market for replacements.

Fuel Oil

Bunker "C" is maintained at $1.05 per barrel, bulk at terminals, and $1.10 per barrel barged alongside within the harbor limits, and the market appears fairly firm at this level. Reports of price reductions at the Gulf in recent transactions have failed to disturb the equanimity of the East Coast market, and some interests venture the prediction that the market is now at the lowest level which will be witnessed in 1930. Apparently, there is still a belief in some quarters that the fuel oil end may be made more profitable, and that a higher price for bunker oil will be witnessed by the close of the year.

Marine interests are heavy takers of bunker oil on annual contracts, a considerable volume of business being booked up through the end of 1931. The United States Lines, now under private ownership, has submitted plans for two giant 50,000-ton superliners, and oil companies are already beginning to show interest in the bunkering business for these vessels. Gulf Oil holds the United States Lines' contract, on a holdover from the contract which Gulf held with the United States Shipping Board, which operated the United States Lines up to the middle of last year, when the Chapman interests took over this line and the American Merchants Line.

Gas Oil

While the posted price remains pegged at 5¼ cents per gallon for 28 plus recycled oil, this figure is largely nominal. Refiners are meeting competition freely at 5 cents, which means that the bulk of the business is going through at that figure. Some small sellers are still shading even the 5-cent level, with considerable quantities of low-grade gas oil reported available at 4⅝ to 4¾ cents at marine terminals.

Manufactured gas companies have been drawing against contracts in larger volume, owing to seasonal increase in gas consumption.

Diesel Oil

A number of new completions of Diesel-powered vessels are reported, and refiners look for a steady increase in sales in East Coast markets this year. While the percentage sales gain is not expected to equal that of 1929, it is expected that a substantial broadening of markets will develop this year.

Principal sellers are holding the market firm at $2 per barrel in bulk at refineries, or $2.06½ per barrel barged alongside within the harbor limits. Contract movement is accounting for a large part of current sales, although there was a moderate amount of activity reported on the spot position.

Lubs

The situation with respect to cylinder oils remains at a standstill. Refiners are still standing pat on their price basis, and buyers are not coming into the market at present levels. This situation has obtained virtually since the turn of the month. Domestic consumers appear to be well covered on their immediate requirements. This is indicated by the fact that there are not enough bids coming in to establish a trading level. While prices quoted are unchanged from last week's level, it is possible they could be shaded fractionally on practically all grades on a firm bid.

Red and pale oils have continued to move out in good volume, and the market is unchanged on all grades. The textile trade is drawing stocks in better volume, although labor disturbances in some branches continue to retard operations, and consequently lighten the total consumption of spindle oils. There has been a fair export movement of these oils, both at Atlantic Coast ports and at the Gulf.

Paraffin Wax

Spot movement of fully refined was again rather sluggish, but prices are holding firm on most grades. Spot 130-132 a.m.p. was reported to have sold at 4½ cents per pound, but the market subsequently firmed up again to the 4⅝ cents level. The higher melting points were fractionally easier, with 133-135 a.m.p. offering at 5⅝ cents, off an eighth, and 135-137 a.m.p. available at 5¾ cents, also down an eighth from previous asking prices.

Domestic consuming manufacturers are drawing stocks against contracts in good volume, but there has been very little new business in the market from these sources. A number of buyers hold contracts running out March 31, and it is expected considerable contracting for the second quarter will be done shortly.

Export buyers have bought wax in fair quantities for shipment out of New York and Philadelphia, and a fair amount of foreign business was also placed at the Gulf. South America and South Africa have been operating in the market.

Export Markets

Weakness in the California gasoline market has apparently distracted buying interest from the Gulf, the latter market again being inactive. A number of California gasoline cargoes have moved to European markets within the past few weeks, but reliable reports on quantities, etc., are lacking, as these deals are not being made in the open market. A number of large companies with Pacific Coast production and refining facilities are understood to be moving considerable quantities of the California product on their export contracts.

Panuco crude has failed to attract any additional buying interest and operators here believe the Panuco market will be a dead issue for a month or so. Buyers have taken care of their first quarter's requirements in most instances, making additional spot transactions at this time rather improbable. The market is reported showing a fairly steady tone. Little interest has been shown in Venezuelan crude, this situation also holding unchanged.

Numerous reports regarding low-priced offerings of gasoline for shipment from California are heard, although a netback of 5¾ cents to the refiner appears to be the prevailing open-market figure. Rumors of business done at prices showing a netback of but 5¼ cents have been heard, but are generally discounted.

The Export Association basis continues to rule as the posted price at the Gulf, and a fair contract movement at these levels is reported on the part of the large integrated companies. The open market is inactive, although independent English buyers are reported to have bought considerable quantities of gasoline in the Mid-Continent area, under a parity with posted export prices, with this motor fuel moving out through New Orleans.

The charter market, particularly on clean bottoms, remains in strong position. The large companies appear to have considerable of the independently owned tonnage under charter, and this fact has made for marked curtailment of activities on the part of independent marketers, particularly with respect to the movement of California gasoline to the Eastern United States seaboard.

Petroleum Exports

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Feb. 8	Feb. 1	Jan. 25
Gasoline	171,000	468,000	900,000
Naphtha	625,000	975,000	825,000
Kerosene	5,000	410,000	25,000
Fuel oil	8,000	30,000	125,000
Lubricating oil	1,305,000	2,395,000	3,410,000
Petroleum, refined	1,575,000	831,000	1,725,000
	Pounds		
Petrolatum	46,000	.....	.....
Paraffin wax	956,000	2,660,000	2,205,000
Refined	970,000	831,000	1,300,000
Scale	520,000	264,000	812,000
Lubricating grease	945,000	765,000	1,620,000

Export inquiry at Atlantic Coast ports has fallen off somewhat, the bulk of the movement being on contract. Foreign buying of cylinder stocks at New York has been particularly dull, with red and pale oils making up the bulk of the week's export shipments. Cased gasoline and kerosene has moved fairly well, but the market for the bulk product is inactive, owing to the general feeling of weakness in the market, and the prevailing easiness in California. Many export buyers have been looking for a reduction in the posted prices for gasoline for export at the Gulf, but there is no immediate indication of any downward scaling in the basis at the Gulf.

Imports

Imports of crude and refined petroleum

at the principal ports for the week ended February 8 totaled 1,378,000 bbls., a daily average of 196,857 bbls., compared with 1,446,000 bbls., a daily average of 206,571 bbls. for the previous week. Details follow:

	Bbls. of 42 Gals.
At Atlantic Coast Ports—	
Baltimore	107,000
Boston	90,000
New York	801,000
Philadelphia	211,000
Others	136,000
Total	1,348,000
Daily average	192,571
At Gulf Coast Ports—	
Galveston district	15,000
New Orleans & Baton Rouge	15,000
Total	30,000
Daily average	4,286
At all United States Ports—	
Total	1,378,000
Daily average	196,857

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended February 8 totaled 479,000 bbls., a daily average of 68,429 bbls., against 418,000 bbls., a daily average of 59,714 bbls. for the previous week. Details follow:

	Bbls. of 42 Gals.
At Atlantic Coast Ports—	
Baltimore	135,000
New York	299,000
Others	45,000
Total	479,000
Daily average	68,429

There were no receipts of California oils at Gulf Coast ports during the week.

Distribution of total California oil receipts is as follows:

Gasoline	379,000
Kerosene	30,000
Fuel oil	70,000

Shipments of California refined oils Eastward for the week, with owner of tanker moving the oil, where such owner is an oil company, follows:

To New York—92,000 bbls. of distillate on the Java Arow (Standard Transportation Co., S. O. N. Y.); 76,900 bbls. of gasoline on the Washington.

To Philadelphia—117,000 bbls. of gasoline on the Pacific Sun (Sun Oil Co.) and 96,900 bbls. of gasoline on the Delaware Sun (Sun Oil Co.).

KANSAS FIELDS

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No. 1 Tebbens, NW cor., Section 18-23-15, has been completed for 45 bbls. in sand 1,602-15 feet.

Elk County

National Refining Co. made location for No. 1 Shambaugh, SW cor. NE NE, Section 21-28-9. Minnehoma Oil Co. and others' No. 5 Denton, C W half SW, Section 3-31-8, has been completed for 600 bbls. in sand 1,930-50 feet. Mann and others' No. 1 Hazlett, C SW SE, Section 12-31-8, has been shut in for 2,500,000 feet of gas in sand 1,504-12 feet.

Ellis County

Phillips Petroleum Co. made location for No. 1 Owen, SE cor. SW, Section 32-11-17w. Location has also been made for No. 1 Ruth, SE cor. NW, Section 32-11-17w. The rig is up for No. 1 Clinton, SE cor. NW, Section 5-12-17w. Central Commercial Oil Co. has the cellar and slush pit dug for No. 1 Helms. SE cor. NE, Section 2-12-20w.

Greenwood County

Derby Oil Co.'s No. 1 Biggs, NE cor. SW, Section 36-24-10, is a rig. Aladdin Oil Co. and Phillips Petroleum Co. made location for No. 1 Jones, NE cor. SE NW, Section 36-24-10. Shull Drilling Co. made location for No. 2 Allis, NW cor. SE NW, Section 17-24-13. Kansan Oil Corp. has the rig up for No. 1 Stanhope, NE cor. NW NE, Section 18-26-9. Simmons and Amerada Petroleum Corp.'s No. 2 Ellis "B," SW cor. NE NW, Section 27-23-11, has been completed for 125 bbls. in sand 1,901-40 feet. Empire Oil & Refining Co.'s No. 6 Patterson "C," NW cor. SE, Section 36-23-11, made 265 bbls. in sand 1,809-44 feet.

Harvey County

McPherson Oil & Gas Development Co. is moving the tools in for No. 1 Palmer, C SW NW, Section 36-22-2w. Tools are also being moved in for No. 2 Houry, C SE SE, Section 11-23-2w. Jolly & Ogg's No. 1 Schowalter, NE cor., Section 11-24-1w, is preparing to deepen from 3,444 feet.

Lyon County

Balliere and others' No. 1 McKee, SW cor. SE, Section 32-21-11, has been abandoned at 2,068 feet.

Marion County

White Eagle Oil & Refining Co. and others' No. 1 Ucker, NE cor. NW, Section 24-17-2, is a dry hole at 3,265 feet. Aladdin Petroleum Co.'s No. 2 Rample, NW cor. SE SE, Section 12-19-2, made a 60-bbl. well in sand 2,836-45 feet.

McPherson County

Ben Gurley and others made location for No. 1 Johnson, SW cor., Section 17-18-2w. McPherson Oil & Gas Development Co. is moving tools in for No. 1 Rudiger, C NE, Section 26-20-2w. Wentz Oil Corp. is building the rig for No. 1 Sperling, NE cor. SE SW, Section 9-21-3w, Voshel Pool. Independent Oil & Gas Co. is erecting the rig for No. 2 Sperling, SE cor. NE SW, Section 9-21-3w. Shell Petroleum Corp. has the rig up for No. 1 Koehn, NE cor. NW NE, Section 16-21-3w.

Morton County

Argus Gas Co. has the rig on the ground for No. 1 Armstrong, CNL S half N half NW, Section 16-34-39w.

Morris County

Loomis and others' No. 1 Ginter, C N half NE SE, Section 16-16-7, has been abandoned at 1,475 feet.

Russell County

Mid-West Exploration Co. has the cellar dug for No. 36 Dortland, SE cor., Section 5-14-15w.

Sedgwick County

Continental Oil Co. and Gypsy Oil Co.'s No. 8 Reed, NE cor. NW SW SE, Section 1-26-1w, Valley Center Pool, is a rig building.

Stevens County

Argus Gas Co.'s No. 1 Smith, C SW, Section 13-33-37w, is rigging up. Location has been made for No. 1 Parkey, C SW, Section 19-34-36w.

Sumner County

Dickey and others' No. 3 Kratz, SW cor. NW, Section 36-34-2, has been completed for 8,000,000 feet of gas in sand 1,570-74 feet.

CHICAGO WAITING TO JUDGE PRICE CUTS

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the result of the replacement of old stills by new. The price made was 75 cents on both gravities. There have been contracts for much heavier oils than the heavier of the two noted and contract prices have been mentioned as low as 38 cents a barrel for these oils which at present can be used by a limited number of industrial plants only.

Reports made by buyers in the field and by the refiners are to the effect that there is no great quantity of the desirable fuel oils and the main reasons for this is that the crudes run are not as good, along with the more general adoption of cracking stills or tube stills or some kind of equipment, all designed to get more of the most profitable product, gasoline. There has been some offering of fuel oils that are really crudes from smaller fields and no better than the residual oils referred to, but the attraction has been the price. Some of these are offered in the 18-22 gravity at 55 cents.

Held at 80 Cents

Really desirable zero fuel oils are held at 80 cents as the minimum. Occasional cars might be picked up for less. This has been the low price quoted for Oklahoma zero fuel oil. For a clean 18-22 fuel oil with an ordinary cold test the price would be around 70 cents, but little of this material is moving even in coil cars. The demand is all for the zero oils. Right now the falling of in oils in demand for heating has been made good at least in part, by the increased demand for oils for industrial uses.

Lubricating oils are quiet and unchanged except that the position of neutral stocks is improved by the plan of some refiners not to run more than they need and crack the remainder rather than refine the stock. Several of the largest sources of supply have stated that they were out of the market for neutrals and would not have any more to offer this season. One refinery price list shows an advance of one-quarter of a cent on all of its neutral oils. There is no active demand for motor oils and the business in industrial oils is badly cut in this city by competing refiners and compounders.

Two of the largest cities in this territory now have service station prices 2 cents below normal. In Chicago the tank wagon price was also reduced 2 cents but in Detroit the service station price was cut 2 cents and the tank wagon price 1 cent. There have been numerous rumors that other cities would receive similar treatment if there were no general tank wagon change. The wide margins have been profitable for the jobber where he has kept them but there has been much price cutting.

Small Distributors Give Discounts

The commercial accounts are ones that give opportunity for price manipulation. According to one of the large integrated companies operating in this city, it is not the large distributors who handle the major part of the commercial accounts. An executive for one of the major companies stated that a survey showed that 85 per cent of the commercial accounts were sold by the smaller distributors who got this business by giving large discounts and other attractive offers. Their ability to get this business lies in the wide margins. One smaller jobber justified his action by saying that if he could sell at 2 cents under the tank wagon price and make money while the large companies could not make a profit at his price it was simply a good reason why he should have the business for he was serving the public at less cost to the public than the larger companies.

The disadvantage of the smaller dealer is his varying costs for the commodity which he sells. If he is basing his sales on a margin deducted from the prevailing tank wagon or service station price he is liable to suffer at both ends of the transaction, for his selling price might be reduced at the time when his refinery costs were increased.

Buying on a contract today the refinery price is 6⅛ cents or close to that figure. Freight to Chicago is 2⅜ cents. Delivered price here is 8½ cents. Prevailing tank wagon price is 14 and service station price 15 cents. The dealer might buy in the open market for three-eighth cent less. Making any profit by selling at reduced prices is all a gamble. Quite commonly in such cases it is the gamble of the creditors, not of the dealer.

GAS CONFERENCE AT PITTSBURGH

PITTSBURGH, Pa., Feb. 15.—The first natural gas regional sales conference, covering the states of Pennsylvania, Ohio, West Virginia, Maryland, New York and Kentucky, and Canada, sponsored jointly by the American Gas Association and the Pennsylvania Natural Gas Men's Association was held here this week. Nearly 300 leading executives and sales managers of the gas industry attended the conference and participated in the discussions which followed the presentation of papers prepared by leading operating and utilization men.

Among those on the program in addition to B. J. Mullaney, president of the association, were Reid Cameron, Pittsburgh, Pa.; E. A. Munyan, Cincinnati, Ohio; F. C. Mackey, Chicago, Ill.; E. C. Weston, Columbus, Ohio; R. C. Polk, Pittsburgh, Pa.; H. O. Loebell, New York; Karl Emmerling, Cleveland, Ohio; E. W. Esslinger, Cincinnati, Ohio; George L. Scofield, Brantford, Ontario, Canada; V. L. Black, Pittsburgh, Pa.; and A. J. Peters, New York.

PITTSBURGH EQUITABLE METER'S TULSA PLANT

One of Tulsa's newest branch factories was opened Saturday, February 15, when the Pittsburgh Equitable Meter Co. held an informal reception at its new building located near the Hale station of the Sand Springs Railway Co. west of the city.

This factory branch has been found necessary to care for the ever increasing volume of business of the Pittsburgh Equitable Meter Co. in the Mid-Continent territory, and consists of a brock and concrete building 50 feet wide by 150 feet long, one story high with full basement that will be used as office, shop and warehouse.

A. J. Kerr, in charge of the company's business in Tulsa, officiated as host at the reception and he was assisted by L. H. Duncan, manager of the Pittsburgh Equitable Meter Co. of Texas with headquarters in Dallas, and the Tulsa office staff. During the afternoon about 100 field and office men working for the larger companies visited the plant and in the evening over 200 men and women enjoyed the dancing and card playing, also the entertainment furnished by pupils from Mrs. Josephine Story-White's studio.

This plant will be served by a spur from the Sand Springs Railway Co. and is equipped with a crane system within the building which will facilitate handling of meters and parts. The loading-out platforms alongside of the building are so arranged that trucks can be quickly and easily loaded in all kinds of weather.

The machine tools for the shop will be installed this week and will all be electrically driven and of the latest design. The offices of the company were moved to the new headquarters Saturday and now occupy spacious and well appointed rooms located in the front part of the building.

Ezekiel T. Johnson, 54 Years an Oil Man, Dies at the Age of 90

BRADFORD, Pa., Feb. 15.—Ezekiel T. Johnson, aged 90 years, for 54 years an oil producer, died at his home here on Tuesday.

Mr. Johnson came to the Bradford Field shortly after oil was discovered in commercial quantity in 1875

With his brother, W. H. Johnson of Buffalo, and others he organized the Anchor Oil Co., which operated extensively in the local field. This company was sold and Mr. Johnson organized the Test Oil Co., which operated in New York, Pennsylvania, West Virginia, Illinois, Kansas and Oklahoma. Mr. Johnson sold this company in 1920 and thereafter led a life of semiretirement until last year, when he disposed of the last of his oil interests when approaching his ninetieth year.

He retained his health and was remarkably active for one of his years until a short time before his death.

Mr. Johnson was married shortly after his discharge from the Civil War in 1865, but his wife died two years later and he never remarried. They had no children, but a number of nieces and nephews survive him.

The funeral was held Thursday. Services were conducted in Bradford and burial in Forest Lawn Cemetery in Buffalo.

E. T. Johnson was truly one of the grand old men of the oil industry. A man of the highest character and with an agreeable personality, he was successful in business and while not attaining great wealth, left at his death a comfortable fortune.

WILL BUY SUPPLIES FOR ANGLO-PERSIAN

LONDON, England, Feb. 15.—B. R. Jackson, who has been appointed representative in America of Anglo-Persian Oil Co., Ltd., sails from Southhampton on February 26 by the "Berengaria" for New York. The quantity of field and refinery equipment purchased by the Anglo-Persian in the United States of America has been increasing for some years, and it is now necessary for the company to have its own representative in New York to attend to this important side of its business.

Natural Gasoline Manufacture

Bulk of Increased Production Comes From Three States

A few new fields in California, Texas and Oklahoma accounted for the increase in natural gasoline production during 1929 according to comparisons based on Bureau of Mines reports. The total increase of all areas for the year was 419,400,000 gallons which amounted to 23.6 per cent.

All of this increase can be accounted for by the enlarged output of the three states mentioned. Oklahoma production for 1929 increased 60,200,000 gallons or 10 per cent; Texas 91,300,000 gallons or 27.6 per cent, and California 259,000,000 gallons or 47 per cent.

In Oklahoma as shown in the table all of the fields had a smaller production in 1929 than they did in 1928 with the exception of the Greater Seminole area. The production of that area increased to 344,900,000 gallons a gain of 97,400,000 gallons, when compared to the total for 1928. Thus the fields outside of this flush showed a decrease of approximately 30,000,000 gallons in 1929.

In Texas practically all of the increase in 1929 was due to the expansion of plant facilities in the Texas Panhandle especially Gray County. The Panhandle production was 71,200,000 gallons greater in 1929 than in 1928. The remainder of the increase came from a few scattered pools, the older pools in the State showing consistent decreases.

In California where the bulk of the 1929 increase originated, the development of deeper sands in the Los Angeles Basin brought a flood of production. The greater part of the increase came from Long Beach and Santa Fe Springs Fields. The following table gives the production by fields for 1929 and 1928:

NATURAL GASOLINE OUTPUT, 1929-1928 (Thousands of Gallons)

	1929	1928
Appalachian	101,600	99,700
Illinois, Kentucky, etc.	13,800	14,200
Oklahoma	676,500	616,300
Seminole, etc.	344,900	247,500
Osage County	84,500	98,700
Rest of state	247,100	270,100
Kansas	33,800	35,700
Texas	422,300	331,000
Panhandle	183,800	112,600
North Texas	44,400	44,900
West Central Texas	151,300	156,700
Rest of State	38,800	16,900
Louisiana	63,400	55,500
Arkansas	32,300	32,700
Rocky Mountains	47,500	45,900
California	804,200	545,200
Long Beach	227,800	177,100
Ventura Avenue	76,600	65,400
Seal Beach	41,300	30,900
Huntington Beach	41,900	50,100
Santa Fe Springs	222,300	39,600
Rest of state	194,300	182,100
Total	2,195,400	1,776,000
Daily average	6,010	4,900
Stocks end of year	25,362	25,500

OUTPUT OF OLDEST PLANT

The natural gasoline plant of the Lone Star Gas Co. located 3 miles south of Petrolia, Tex., one of the oldest plants in the North Texas area, has produced 35,245,326 gallons of natural gasoline, according to official figures from the company.

The plant, which was the first to be built by the Lone Star company, started operating October 21, 1916, and has been in continuous operation since that time.

PASSES 1,000,000,000 MARK

The Phillips Petroleum Co., Bartlesville, Okla., largest manufacturer of natural gasoline, last week passed the 1,000,000,000 mark in total natural gasoline production. Over one-fifth of this output was produced last year, the company's 1929 output totaling 220,000,000 gallons.

REPORT SHOWS THAT SEMINOLE HAS PASSED PEAK IN GASOLINE OUTPUT

The Greater Seminole area of Oklahoma so far as present pools are concerned has apparently passed its peak production of natural gasoline.

A check of the production made the latter part of last week showed that the decline which got under way in November continues. According to production reports obtained from the 17 companies in several pools which constitute the Greater Seminole area the total output was 863,800 gallons daily, a decrease of 69,200 gallons daily when compared with the production figure for November 15.

The latest check was made after the plants to a large extent had recovered from the weather conditions which greatly reduced production the latter part of January. Most of the plants are operating on a normal basis so far as weather conditions are concerned.

The present production is approximately 400,000 gallons daily under the peak output of last year. Part of the reduction is due to the proration agreements which have been effective for several months in the operation of the wells. This proration program was immediately reflected in the production of natural gasoline as it materially reduced the quantity of gas available to a large number of plants and this situation continues up to the present time.

Those who have made a study of the field agree that regardless of whether or not the proration of the field's production continues the natural gasoline production will never approach the peak of last summer. The only "if" in this prediction is based on the possible discovery of new pools adjoining those now within the proven pools.

The gas supply in some of the older pools has declined rapidly in recent months. Wells are constantly being shifted from the gas lift to the pump. This decreases the gas supply and although the gas from the pumping wells is richer in gasoline content it does not offset the loss in volume of gas. Water encroachment particularly in the St. Louis-Pearson area had reduced the gas supplies for several plants. Use of the air lift rather than the gas lift has also been a factor in the operation of the gasoline plants.

In several cases the production of companies is off 50 per cent when compared to the peak period. The production of the Empire Oil & Refining Co. which was reported at 102,000 gallons daily the middle of November is now 57,300 gallons daily. This company's production has declined rapidly in the Bowlegs Pool, a development which has been common to other operators obtaining gas from that pool. The production of the Gypsy Oil

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NATURAL GASOLINE PRODUCTION IN GREATER SEMINOLE

	Seminole City	Bowlegs	Earlsboro	Little River	St. Louis Pearson	Maud	Mission	Total
Amerada Pet. Corp.	.....	3,500	14,000	.....	.....	22,500	9,000	49,000
Aircraft Gasoline Corp.	.....	.....	.....	1,000	.....	.....	.....	1,000
Barnsdall O. & G. Co.	.....	.....	8,000	.....	.....	10,000	.....	18,000
Carter Oil Co.	†125,000	5,000	.....	30,000	.....	.....	.....	160,000
Crosbie & Moran	.....	.....	19,000	.....	.....	.....	.....	19,000
Empire O. & R. Co.*	24,000	17,000	.....	5,300	.....	11,000	.....	57,300
Forrest E. Gilmore Co.	.....	4,500	.....	22,000	12,000	.....	.....	38,500
Gypsy Oil Co.	.....	.....	.....	48,000	.....	.....	32,000	80,000
Independent O. & G. Co.	.....	.....	.....	20,000	.....	.....	8,000	28,000
Magnolia Pet. Co.	.....	.....	6,000	.....	9,000	.....	.....	15,000
Moran & Gillespie	.....	.....	.....	.....	25,000	.....	.....	25,000
Pure Oil Co.	10,000	4,000	.....	6,500	4,500	.....	.....	25,000
Powers, M. F.	.....	.....	.....	.....	2,000	.....	.....	2,000
Shell Pet. Corp.	.....	3,000	.....	.....	22,000	.....	16,000	41,000
Sinclair Oil Co.	90,000	80,000	.....	.....	25,000	.....	.....	195,000
Skelly Oil Co.	.....	.....	62,000	.....	.....	7,000	.....	69,000
Victor Gasoline Co.	1,000	16,000	1,000	23,000	.....	.....	.....	41,000
Total	250,000	133,000	110,000	155,800	99,500	50,500	65,000	863,800
Production Nov. 16	220,500	179,500	114,500	143,500	111,500	64,000	99,500	933,000

*Includes production of Indian Territory Illuminating Oil Co. †Includes production in Searight Pool.

Who's Who
IN NATURAL GASOLINE MANUFACTURE

OHIO OIL CO.

The Ohio Oil Co., one of the original crude oil producing units of the Standard group, for several years has been a large manufacturer of natural gasoline.

Originally, the natural gasoline phase of its operations was confined to small compression plants operated in connection with producing wells in Illinois. The company still has a large number of these plants operating in Illinois.

In recent years the company has expanded its operations west of the Mississippi River in the Mid-Continent and Rocky Mountain Fields. As the result of this expansion the company now has several plants in Louisiana, Wyoming, Texas and Oklahoma through its subsidiary the Mid-Kansas Oil & Gas Co.

The main operating offices of the company and its subsidiaries are located at Findlay, Ohio. No separate department is maintained for the natural gasoline plants, the operations being in charge of the producing divisions including the subsidiary operations. The output of the plants is disposed of in various ways and in Illinois part of the production is mixed with the crude and moved by pipe line. The Lincoln Oil Refining Co. a subsidiary of the Ohio Oil Co. operates a 10,000-bbl. refinery at Robinson, Ill., and this plant furnishes an outlet for part of the natural gasoline output.

Following is a list of the company's operating plants:

OHIO OIL CO.

Plant location—	Daily capacity
Illinois	
37 scattered plants	26,448
Louisiana	
Clairborne Parish	9,400
Webster Parish	10,000
Wyoming	
Niobrara County	7,500
Carbon County	4,500
Natrona County	14,400
Hot Springs	7,560
MID-KANSAS OIL & GAS CO.	
Oklahoma	
Osage County	8,000
Texas	
Stephens County	20,000
Stephens County	10,000
Eastland County	4,000

Use Sand Blast in Cleaning Tank Cars For New Paint Job

By B. F. Spigener
Columbian Gasoline Corp.

The cleaning and painting of tank cars is quite some job. We cleaned and painted all the company's cars in 1924 and again in 1927. We first had to send to the tank car corporation and get a copy of the stencils lettering that were on the cars. Press board to cut the stencils were secured. We cut out a set of the stencils but before any cleaning or painting was done we had to take down all the dates that were on the cars such as when the car was built, whether tank was retested and by whom, its capacity, etc.

It is necessary that the surface of the cars be cleaned before the paint is applied. In 1924 as well as in 1927 this was done by the use of brushes and scrapes and in some places a hammer was used to break off thick rust. In 1924 two crews were employed in the cleaning and painting of the car, one to brush and clean, and the other to paint and stencil them. Each car was cleaned, painted, repaired and safety valves tested before being put back in service.

Our experience shows that these cars were not really cleaned. It would be very nearly impossible to get all the rust, dirt, grease and mill scale off without blasting it, for we have tried it with air brushes, hand brushes and scrapes and have failed to really get all the scale and rust off; in fact, only the loose scale and rust was brushed off. Even the surface does not look bright and free from scale as it should if all of it were really off.

The cleaning and painting the cars in 1927 was an almost repetition of 1924 except we had an air brush in 1927 which made the cleaning faster and some better than 1924. This summer we secured a multiblaster sand blast to try out with the idea of blasting the cars in the future as they needed painting. They sent two of the blasts to us, Standard (T-1) and Medium Type (T-3/4), and also pamphlet of instructions. The Standard Type (T-1) requires 80 to 90 pounds of air and the Medium Type (T-3/4) 60 to 70 pounds of air.

But by careful test we have found that the higher the pressure the better results we get. The sand should be dry and flint shot. The dryer the sand the better and the sand supply should be higher than the work. After testing out both blasts we decided to keep Standard Type (T-1) and return the Medium Type (T-3/4).

We ordered a car of the blasting sand. When it came we unloaded it on the ground, the fire engine room was cleaned out and steam heaters placed horizontally on the floor and the sand pile in on top of the heaters to dry.

Operating Sand Blast

We then made a frame out of 2 by 4 inch with a cross piece on top; to this we fixed a block and line to haul the sand up for the man using the blaster. The sand was carried out in 5-gallon buckets and poured out into a bucket with a connection in bottom. The suction hose has a funnel inserted in the end of the hose and held in place by hose clamp. The funnel is placed under the valve on the bucket.

With the above temporary rig we blastell our first car. The first car blasted was S.C.N.X. 527. We were 14 hours and 30 minutes blasting all the paint off. The surface of the car looked almost as if you had used an emery on it.

Two coats of paint were applied to the shell and dome of the car and one coat to the running gear and bottom section

(Continued on Page 158)

Brief Items for Petroleum Refiners

Attorney General Files Suit Against California Concerns

A suit was filed in the United States district court February 15 against 19 companies which are engaged in selling petroleum products in California, alleging price fixing in violation of Federal laws. The suit was brought by George J. Hatfield, Federal district attorney.

The civil suit follows a recent grand jury investigation in which Federal officials sought to indict oil company officials. This investigation was dropped and the district attorney, acting on orders from the Attorney General's Department at Washington, D. C., brought the civil action.

The suit seeks to enjoin the oil companies from "conspiracy to maintain an unfair price for gasoline." It is claimed that their action constitutes a violation of the antitrust laws. The petition also asks that the defendants be "restrained from posting prices at gasoline stations."

The following companies are named in the suit:

Associated Oil Co. of California, The Texas Company of California, Union Oil Co. of California, Standard Oil Co. of California, Richfield Oil Co. of California, General Petroleum Corp. of California, Shell Oil Corp. of California, Marine Refining Corp., Hancock Oil Co., MacMilan Petroleum Co., the Rio Grande Oil Co., the Edington-Witz Refining Co., Hercules Gasoline Co., Seaside Oil Co., Shamley Gasoline Co., Sunland Refining Co., United States Refining Co., Vernon Oil Refining Co., and Western Oil & Refining Co.

The suit also named F. R. Long of Los Angeles as a defendant. The suit alleges he was "the medium" for an arrangement between the seven major companies and the 12 independent concerns whereby the major companies purchased gasoline from the other 12 on condition of sale at fixed prices to the end of preventing the independent companies from competing with the major companies.

The suit also alleges that all the companies "have operated under an agreement between themselves to eliminate competition as to prices, terms and conditions of sale of gasoline, fixing uniform and non-competitive prices to be charged by all of them for said gasoline. They have agreed to refuse and in fact have refused to sell, furnish, transport, supply and deliver gasoline to any retailer in the Pacific Coast area who refuses to sell at prices so fixed."

The complaint in conclusion states that the gasoline business in the Pacific Coast area has been under the domination of the companies, who have "stifled and eliminated" all competition.

HEARN WITH SHELL

SHREVEPORT, La., Feb. 17.—Bradford Hearn, assistant sales manager for the Shreveport-El Dorado Pipe Line Co. refinery division at Shreveport, resigned effective February 15 and he is now in charge of the Dallas office of the Shell Petroleum Corp. His first connection with the oil industry was as manager of the Claiborne Pipe Line Co. shortly after the Homer boom developed in 1919. When the Shreveport Producing & Refining Corp. was organized in December, 1919, he joined it the next month as assistant secretary and in April, 1920, was made secretary. When the merger with the Shreveport-El Dorado Pipe Line Co. was effected in January, 1929, he was secretary-treasurer and subsequent to the merger became assistant sales manager in the refinery division.

PAPERS ANNOUNCED FOR SHREVEPORT MEETING OF REFINERS ASSOCIATION

Seven papers dealing with operating methods or with equipment in oil refining will be delivered at the two-day meeting of the Manufacturers Committee of the Western Petroleum Refiners Association to be held March 11 and 12 in the Washington-Youree Hotel, Shreveport, La. L. R. Crawford of the Producers & Refiners Corp., chairman of the committee, will preside at the sessions, which are to open at 1:30 o'clock Tuesday afternoon, March 11. Sessions will be held Wednesday forenoon and afternoon. Papers to be read follow:

Tuesday afternoon: "Specifications of Natural Gasoline," S. S. Smith, Shell Petroleum Corp.; "Non-metallic Protective Linings for Petroleum Refining Equipment," Dr. J. C. Morrell, Universal Oil Products Co.; "Fire-fighting Equipment in the Refinery—its Maintenance and Use," E. E. Kerns, Louisiana Oil Refining Co.

Wednesday forenoon: "Instruments for Refining — Operation and Laboratory Testing," C. L. Huffman, Tagliabue Manufacturing Co.; "Handling and Shipping Natural Gasoline," Emby Kaye, Skelly Oil Co.

Tuesday afternoon: "Depreciation of Refinery Equipment," L. D. Mann, Empire Refineries, Inc.; "Use of Waste Heat in Cracking Fuel Oils," B. P. Crittenden, Louisiana Oil Refining Co.

The annual meeting of the Western Petroleum Refiners Association will be held in the same hotel on Monday, March 10. Following a luncheon at noon, Roy B. Jones, president of the Panhandle Refining Co. and president of the association, will give a paper touching outstanding features of the refining industry in the last year and glancing into the future. The subjects dealt with will be discussed by the other members of the association. Officers for the next year will be chosen.

STATE GASOLINE TAX COLLECTIONS FOR 1929 TOTALED $449,731,000

Motorists of the United States paid a total gasoline tax bill of $449,731,000 in 1929, an increase of $144,537,000, or about 47 per cent, over the $305,233,824 total of 1928, it is estimated by the American Petroleum Institute. This represents an increase in the tax per vehicle to $17.04 from the average of $12.45 collected in 1928.

The total is based on official reports of actual gross collections in 35 states and the District of Columbia and estimated gross collections for recent months in 13 states. California again leads the states in collections with $37,599,713, an increase of more than $5,000,000. Ohio is second with an estimated total of $36,000,000, a gain of approximately $10,000,000. Pennsylvania is third with $35,038,619, but shows the largest single gain for the year, $13,140,555. Wide increases, some nearly 100 per cent, are shown in Kansas, Georgia, Louisiana, Montana, Nebraska, Oklahoma, Tennessee, Texas and Washington. There were no decreases.

The 1929 collections lifted the Nation's gasoline tax bill to a new high for all time. It is about 96 times that of 1921, 35 times that of 1922 and 12 times that of 1923, and brings the increase of the states from this source to more than $1,200,000 a day.

The rapid growth of the gasoline tax is shown in the following table prepared by the institute from official records:

1921	$4,700,000
1922	12,100,000
1923	36,800,000
1924	79,700,000
1925	146,100,000
1926	187,600,000
1927	251,800,000
1928	305,234,000
1929	449,731,000

All states now impose a gasoline tax, the rate ranging from 2 to 6 cents per gallon of gasoline, or 18 to 33 per cent of the retail price of the commodity. This is believed to be the largest direct sales tax imposed on any commodity.

The institute's records show these collections for 1929 and 1928:

State—	Total tax 1929 (Institute)	Total tax 1928 (U. S. Bureau of Public Roads)
Alabama	$7,104,215	$6,497,551
Arizona	2,559,831	2,263,215
Arkansas	6,730,347	5,684,415
California	37,599,713	32,276,918
Colorado	5,795,410	4,260,393
Connecticut	*4,068,000	3,468,752
Delaware	c 977,231	834,784
District of Columbia	1,437,760	1,271,586
Florida	12,207,375	11,235,225
Georgia	10,263,711	8,245,486
Idaho	2,205,085	2,005,908
Illinois	*15,000,000	†885,351
Indiana	16,431,543	11,653,962
Iowa	10,068,831	9,199,546
Kansas	10,177,541	5,939,510
Kentucky	7,733,736	6,741,781
Louisiana	6,925,305	3,380,931
Maine	3,834,331	3,288,178
Maryland	*6,550,000	5,607,566
Massachusetts	*5,566,000	(‡)
Michigan	23,358,374	20,200,921
Minnesota	8,895,048	6,211,788
Mississippi	6,805,754	5,564,711
Missouri	*7,865,000	7,100,013
Montana	*4,225,000	2,144,794
Nebraska	7,861,243	3,968,921
Nevada	712,507	575,069
New Hampshire	*2,414,000	1,928,602
New Jersey	9,996,104	8,446,930
New Mexico	2,421,882	1,836,900
New York	*20,000,000	(‡)
North Carolina	11,983,262	10,177,614
North Dakota	3,150,284	2,202,679
Ohio	*36,000,000	25,818,985
Oklahoma	10,929,287	8,179,719
Oregon	*4,870,000	4,308,417
Pennsylvania	35,038,619	21,998,064
Rhode Island	1,571,811	1,182,328
South Carolina	6,978,419	5,539,243
South Dakota	4,930,590	4,008,031
Tennessee	*9,250,000	5,134,600
Texas	22,180,083	17,945,037
Utah	1,979,212	1,664,247
Vermont	*1,730,000	1,118,882
Virginia	10,509,946	9,039,604
Washington	6,442,430	4,542,010
West Virginia	*5,000,000	4,456,274
Wisconsin	7,867,900	7,142,928
Wyoming	1,325,435	955,851
Total	$449,731,159	$305,233,824

*Estimated.
†Tax law held unconstitutional after January.
‡No tax in 1928.

KANSAS STANDARD BUYS CRUDE

To provide an additional supply of crude oil for its refinery in Neodesha, Kans., the Standard Oil Co. of Kansas has contracted to purchase approximately 5,000 bbls. of Wright Pool oil daily from the Continental Oil Co. To transport the crude to Neodesha, the Standard announces it will extend its 6-inch pipe line from Sallyards in western Greenwood County, to El Dorado, Kans., a distance of 23 miles. From El Dorado to Valley Center, the Standard has contracted with the Empire Oil & Refining Co. to run oil through its 12-inch line which has been used similarly by Wright Pool operators during the last year.

TO DOUBLE CAPACITY OF CREW-LEVICK'S REFINERY

The Crew-Levick Co., a subsidiary of the Cities Service Co., will double the capacity of its refinery at Titusville, Pa., according to a program announced by the management. The enlargement program which is already under way will increase the daily crude oil capacity to between 5,000 and 6,000 bbls.

Two new pipe stills are to be installed including a vacuum unit. It is expected that the program will be completed early next fall. The company is also planning on a steady expansion of its marketing facilities in Pennsylvania.

AMERICAN PROPERTIES EARNED $152,780 NET

The American Refining Properties, Wichita Falls, Tex., operated under a receivership since August 23, 1927, showed a net operating and liquidating profit of $152,780.93 in 1929, according to the annual report of the creditors' committee.

This, the report states, "is net after the payment of all operating expenses of every kind and character, including interest on our certificates and lien debts against real estate in the sum of $353,118.27."

Included in the report is the recommendation that the creditors' committee be allowed two additional years from October 1, 1930, during which to dispose of remaining assets. Industry has been so disturbed that the assets could not be disposed of now except at great sacrifice, it is pointed out.

"When compared with our operating results for 1928," the report says, "the showing we have made for 1929 is quite disappointing, but when the enormous interest charge which we have had to absorb is considered and the generally adverse conditions with which we have been confronted during the past year are taken into account, we feel that the showing made is a creditable one. We call your attention to the fact that our total operating and liquidating profits for these properties as of December 31, 1929, amounts to $626,311.83, this having all been earned after full payment of interest and all expenses since the properties were acquired by your committee in the spring and summer of 1928."

PENNY IN THE SLOT MINIATURE PUMPS TO REFILL LIGHTER

The average owner of a cigarette lighter is confronted with the task of refilling his lighter quite frequently. This necessitates the use of an eye dropper which is not only a slow process but usually results in the spilling of the fluid on the hands and the floor.

A new machine which has recently been patented will tend to eliminate all the disagreeable things true of the old method of refilling. The machine stands about a foot high and resembles a miniature gasoline pump. In the center is a glass tube which contains the necessary fuel for lighters. After a penny is inserted, a lever is pressed releasing a definite amount of fuel, enough to fill any ordinary sized cigarette lighter. Machines of this sort are now being distributed to various stores where they are most likely to be used, as in candy stores, etc.

PRODUCERS' REVENUES GREATLY LOWERED BY RECENT CRUDE CUTS

Crude oil prices were reduced in New York, Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, Illinois, Michigan, Kansas, Oklahoma, parts of Texas, Montana, Wyoming and some pools in New Mexico in the past week.

In the case of the Mid-Continent pools the Sinclair Crude Oil Purchasing Co. met the Humble Oil & Refining Co. and Carter Oil Co. prices for Oklahoma, Kansas and North Central Texas, and the Prairie Oil & Gas Co. followed the Sinclair with similar reductions in the Kansas, Oklahoma, Central Texas and in the Panhandle fields in which it buys oil.

The reduced prices in the fields east of the Mississippi River and in the Rocky Mountain fields were made beginning with the Ohio Oil Co. and Midwest Refining Co.'s reductions on Saturday, February 15, and the Joseph Seep Purchasing Agency's new postings of Monday, February 17.

The new posted prices will be found in their entirety on another page of this edition.

The Humble Oil & Refining Co. started the reduced prices on January 15, followed by the Carter Oil Co. The Magnolia Petroleum Co. adopted the Humble-Carter schedules with a little variation in the lower grades. In the Texas fields all the major buyers excepting the Prairie and Sinclair companies adopted the Humble schedule, but in Oklahoma and Kansas the Carter and Magnolia companies were alone from January 16 to February 15 when the Sinclair company came into line followed by the Prairie, all the buyers that had held out awaiting the action of the Prairie Oil & Gas Co., the largest buyers of crude in the two States.

Sinclair Makes Statement

In announcing the Sinclair Crude Oil Purchasing Co.'s action on February 13, the following statement was made by the company:

"Sinclair Crude Oil Purchasing Co., jointly owned by Sinclair Consolidated Oil Corp. and the Standard Oil Co. of Indiana, announced, effective today, it would meet the reductions in crude oil prices in Texas, Oklahoma and Kansas, made January 15 and 16 by the subsidiaries of the Standard Oil Co. of New Jersey and followed by subsidiaries of Standard Oil Co. of New York. Commenting on this announcement, H. F. Sinclair, chairman of the Sinclair Consolidated Oil Corp., said:

"'The reductions made today have only been decided upon reluctantly. We regard the reductions as inequitable and a backward economic step, but of course no one company can continue indefinitely to pay higher prices for its raw material than are paid by its competitors. Crude material so valuable as petroleum should not be sold below cost of production. That course pursued leads eventually to demoralization and loss with no real gain to the community and certainly none to the industry concerned. The oil industry has loyally supported the program of conservation and stabilization fostered by Federal and state government. It is to be hoped that the recent price reductions will not undo the effort toward sane, stable conduct of the industry and impair the spirit of co-operation which had been built up. It is certainly not a step in the upbuilding of general prosperity toward which all industries and all forces have been so urgently invited to contribute.'"

The Prairie's Statement

The Prairie Oil & Gas Co. in announcing its action effective February 15 gave out the following:

"We regret that it has become necessary for us to follow the price reduction posted by our competitors in the Mid-Continent Field. We did not believe such reduction necessary or advisable, and now believe that the evils complained of might more easily have been corrected by the various units in the industry making the same effort before that will have to be made now.

"We cannot afford longer to maintain the price paid by the Prairie Oil & Gas Co. for crude oil while our competitors in the field and the competitors of our customers were able to secure adequate supplies at a price less than we were paying.

"We hope that the producers and refiners alike will continue their councils for co-operation, and by concerted effort and mutual co-operation readjust conditions which of themselves will restore to the average producer of both crude oil and refined products a reasonable price."

The average gravity of Oklahoma and Kansas crude oil is between 37 and 38 degrees and the producers in those States suffer a loss of approximately $200,368 per day based on the current curtailed production of 742,105 bbls. for the two States. The North Central Texas and East Central Texas crude averages about 38 gravity and the new price schedule makes a difference of about $46,475 a day in the income of producers in those fields based on an average of 160,265 bbls. per day production. Pennsylvania Grade producers suffer a loss of about $18,500 a day in income, and Lima, Indiana, Michigan, Illinois and Kentucky producers are losers by about $12,500 per day. The 89,265-bbl. production in the Panhandle Field of Texas was lowered in value about $29,500 per day.

SEMINOLE HAS PASSED PEAK IN GASOLINE OUTPUT

(Continued from Page 145)

Co. has dropped from 110,000 gallons daily to 80,000 gallons.

The Barnsdall Oil & Gas Co., Forrest E. Gilmore Co., Independent Oil & Gas Co., Pure Oil Co., Sinclair Oil & Gas Co., and the Victor Gasoline Co. are among the large operators whose production has undergone a substantial decline. The Sinclair company has consolidated some of its operations, the gas being boosted to the large plants in the Seminole City and Bowlegs Pools.

The Victor output in the Earlsboro Field shows the effect of a shift from the gas to the air lift. The company formerly had a production of 14,000 gallons daily in this plant but due to the fact that some of the wells are now being flowed with air, the production is down to 1,000 gallons daily.

The Carter Oil Co. and the Skelly Oil Co. both have been able to increase their production of natural gasoline recently. The Carter's production from plants in the Seminole City and Searight Pools is now approximately 125,000 gallons daily. The production from wells in these pools has decreased greatly but the gathering lines have been extended to new pools so that the output of the plants has been increased.

The Skelly company has increased the production of its Earlsboro plants to 62,000 gallons daily. A new plant was completed recently. The accompanying table shows production by pools and companies.

PEAKE WILL HEAD NEW PRODUCING DIVISION

A. W. Peake, of Tulsa, president of the Dixie Oil Co., a subsidiary of the Standard Oil Co. of Indiana, has resigned to head a new division of the parent company which he will organize. It is understood that Mr. Peake's new position will put him at the head of all the Standard of Indiana's crude oil production and field operation, with headquarters in Chicago.

Frank O. Prior, formerly vice president of the Dixie Oil Co., has been made president of that company. H. G. Schneider, in charge of the land and geological departments, has been made vice president.

SEVEN NEW LOCATIONS REPORTED IN VAN POOL, VAN ZANDT COUNTY

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Feb. 17.—The following are seven new locations for the Van Pool, Van Zandt County:

Pure Oil Co.'s No. 1 D. R. Howell, 570 feet from the north and 440 feet from the east line of Howell's 59.2-acre tract in the H. V. Moore Survey, southwest of the pool.

The Texas Company's No. 1 R. V. White, 665 feet from the south and 250 feet from the west line of White's 33.7-acre tract in the Nacogdoches County School Land, east of Pure's No. 1 Mager, which is the well farthest north in the pool.

Pure Oil Co.'s No. 1 Clark, 645 feet from the north line and 105 feet from the east line of Clark's 63.3-acre tract in the John Walling Survey, a west offset to The Texas Company's No. 1 Tunnell.

Pure Oil Co.'s No. 1 Tunnell, 250 feet from the north line and 200 feet from the west line of Tunnell's 97.8-acre tract in the John Walling Survey, east of Shell Petroleum Corp.'s No. 1-A Fowler.

Pure Oil Co.'s No. 2 J. Thompson, 525 feet from the north line and 270 feet from the west line of the J. T. Thompson 49.4-acre tract in the Mund Gross Survey, an east offset to Pure Oil Co.'s No. 1 wells.

The Texas Company's No. 1 Tunnell, 645 feet from the north line and 105 feet from the west line of the R. A. Tunnell 101.7-acre tract in the John Walling Survey, an east offset to The Texas Company's No. 1-A Tunnell.

Shell Petroleum Corp.'s No. 3 Tunnell, 250 feet from the south line and 200 feet from the east line of Tunnell's 21.7-acre lease in the John Walling Survey, a north offset to Shell's No. 1-A Fowler.

Rigs are being moved in and erected on these locations.

Three Drilling, Eight Producing

At present there are three wells drilling in the pool and eight producing. The Pure Oil Co.'s No. 1 Crim, 250 feet from the south line and 690 feet from the east line of the Crim 57-acre tract, northwest of the discovery well, topped the Austin chalk at 2,650 feet and drilled 200 feet of this formation, topping the first oil sand at 2,880 feet, approximately 30 feet lower than the Mager well to the northeast, and around 385 feet lower than the highest producer in the field, Shell's No. 2 Tunnell. It is now being cored at 2,891 feet in oil sand.

Pure-The Texas Company's No. 1-A White in the M. Gross Survey, is drilling at 2,608 feet in hard gray shale. It topped the Pecan Gap chalk at 1,680-1,785 feet and the Austin from 2,168-2,312 feet.

Pure-Sun Oil Co.'s No. 1-A Thompson, located in the John Walling Survey, topped the Austin chalk at 2,138-2,326 feet, and is drilling at 2,693 feet in saturated hard brown sandstone. The Woodbine was topped at 2,431 feet.

Wildcats in Van Zandt

The wildcats drilling in Van Zandt County follow: Central Oil Co.'s No. 1 West, in the Ben Wheeler district, is drilling hard shale at 3,080 feet. It topped the Pecan Gap chalk at 2,743 feet. Dennis Oil Co.'s No. 1 Swain, in the John Walling Survey, is shut down at 610 feet. R. C. McElmurry's No. 1 Peel, in the S. T. Meeks Survey, 8 miles southeast of Canton, is drilling in sandy shale at 1,345 feet. The Hart Oil Co.'s No. 1 Swain, located east of the pool on a 2.3-acre tract in the John Walling Survey, is still standing as a location. W. B. Powell's No. 1 Bailey, in Bailey's 51-acre tract, 6 miles southwest of Van, is drilling at 1,500 feet in hard sandy shale.

T. G. Shaw's No. 1 Huddle, 150 feet from the north and east lines of the Huddle farm in the Richardson Survey, southwest of the Van Pool, is drilling at 3,115 feet. Much attention has been riveted on this well, due to the fact that it will extend the pool a considerable distance if a producer. Thornton & Taubert's No. 1 Everett, located in the Carlyle Survey, 4½ miles southeast of Canton, is drilling in hard chalk at 2,940 feet, top of chalk was reported as 2,918 feet. Sprinkler and others' No. 1 Andres, in the Margaret Neal Survey, southwest of Canton, is still a location. Van Zandt Oil & Development Co.'s No. 1 Robinson in the NE cor. of the Y'Barbo Survey, 4 miles east of Grand Saline, is drilling hard shale at 1,390 feet.

In Smith County, East Texas Oil Development Co.'s No. 1 Kadane in the McFadden Survey, is drilling hard sandy shale at 2,105 feet. R. H. Davis' No. 1 Starnes, 3½ miles northeast of Starville, is drilling hard sandy shale at 990 feet. Deep Rock Oil Co. and others' No. 1 Bowdoin is drilling at 1,950 feet. This test is in the Lindale district.

Production Report

The following is a production report of the eight wells now producing in the Van Pool. This report covers the 24 hours ending 7 a. m., February 17: No. 1 Jarman, 474 bbls. on a 4-inch choke; No. 1 Tunnell, 1,431 bbls. on a one-half-inch choke; No. 2 Tunnell, 1,377 bbls. on a one-half-inch choke; No. 1 Thompson, 1,342 bbls. on a one-half-inch choke; No. 1-A Tunnell, 282 bbls. on a 1-inch choke; No. 1 Wells, 794 bbls. on a thirty-eight-sixty-fourth-inch choke; No. 1-A Fowler, 1,480 bbls. on a one-half-inch choke, and No. 1 Makers, 651 bbls. on a 1-inch choke.

All of East Central Texas is coming in for a strong play, but Henderson County is the most active in leasing, geophysical work, core drilling, and royalty buying, with the LaRue structure, near LaRue, being the nucleus of the majority of the buying. Acreage around Gulf Production Co.'s block north of Athens is also the scene of much trading. The general opinion seems to be that the LaRue structure is second only to the Van structure, and will produce accordingly. It is understood that a test will be made in the near future.

Smith and Rusk, Anderson and Freestone are also demanding much attention. Geologists, instrument parties, core drillers and lease men have been busy in these counties all the time. Several salt domes and structures have been mapped, and the play has been exceedingly brisk, with several tests started and other tests announced for immediate drilling.

East Central Texas

Boggy Creek	3,600
Cedar Creek	45
Currie	360
Hill County	45
Mexia	4,441
Minerva	570
Nigger Creek	220
Powell	6,337
Richland	270
Thrall	322
Van	8,048
Wortham	905
Total East Central Texas	25,163
Week ending February 8	22,810
Increase	2,353

SLACKENED ACTIVITY IN COASTAL MARKET

HOUSTON, Tex., Feb. 18.—A slackening of activity was felt in the Gulf Coast pale and red oil market the past week and at the opening of this week few inquiries were being received by sellers. The latter attributed the lack of business not to the recent advances in quotations on lub stocks but rather to a seasonal lull, February usually being a quiet month of sales. With the exception of certain marketing sources, sellers so far have made no move to offer concessions in prices to stimulate business, but are holding steady in anticipatin of new spring business usually started the latter part of February. Other products continued unchanged. Motor fuel seems steady at 7½ cents for tank car movement and kerosene is being held firm at 6 cents. There is some slackening of demand for the latter products whose chief use in this territory is for heating and lighting.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

OKLAHOMA (Group 3)—	Feb. 18		Feb. 11		Feb. 4	
50-52 450 endpoint	.06¼		.06¼		.06¼	
56-58 450 endpoint	.05¾	.06	.05¾	.06	.06	.06¼
*58-60 437 endpoint (U. S. Motor)	.0652		.065		.0655	
*60-62 437 endpoint	.065		.0637		†.06¼	.06½
*60-62 400 endpoint	.0675		.0675		.0717	
*64-66 375 endpoint	.0775		.0775		†.07¼	.08
68-70 360 endpoint	.07½	.08	.07½	.08	.07½	.08
64-66 437 endpoint (blend)	.06	.06½	.06	.06½	.06	.06½
NORTH TEXAS—						
56-58 450 endpoint	.05¾	.06	.05¾	.06	.05¾	.06
58-60 450 endpoint	.05¾		.05¾		.05¾	
58-60 437 endpoint (U. S. Motor)	.05¾	.06¼	.05¾	.06¼	.05¾	.06⅛
60-62 400 endpoint	.06¼	.06¼	.06⅛	.06¼	.06⅛	.06¼
64-66 390 endpoint	.06⅝	.07	.06⅝	.07	.06¾	.07
64-66 375 endpoint	.07⅛	.07½	.07	.07¼	.07⅛	.07¼
68-70 360 endpoint	.07½	.07¾	.07½	.07⅞	.07½	.07¾
64-66 437 endpoint (blend)	.06	.06½	.06	.06½	.06	.06½
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.06¾		.06¾		.06¾	
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.06¾		.06¾		.06¾	
PENNSYLVANIA—						
52-54 Naphtha	.07	.07¼	.07	.07¼	.07	.07¼
54-56 Naphtha	.07	.07¼	.07	.07¼	.07	.07¼
58-60 Gasoline	.07½	.07¾	.07½	.07¾	.07½	.07¾
60 Gasoline	.07¾	.08	.07¾	.08	.07¾	.08
62 Gasoline	.07¾	.08	.07¾	.08	.07¾	.08
64 Gasoline	.08	.08¼	.08¼	.08½	.08¼	.08½
68-70 350 endpoint gasoline	.09¼	.09½	.09¼	.09½	.09¼	.09½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.09	.10	.09	.10
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.06¼		.06¼		.06¼	
56-58 450 endpoint	.05¾	.06	.05⅝	.06	.05¾	.06
58-60 437 endpoint (U. S. Motor)	.05⅞	.06⅛	.05¾	.06⅛	.05¾	.06⅛
60-62 400 endpoint	.06¼	.06½	.06¼	.06½	.06¼	
64-66 375 endpoint	.07¼	.07½	.07⅛	.07½	.07⅛	.07½
68-70 360 endpoint	.07¾	.08	.07⅝	.08	.07¾	.08
64-66 437 endpoint (blend)	.06¼		.06¼		.06¼	.06½
GULF COAST (Export)—						
58-60 (U. S. Motor)	.08½		.08½		.08½	
60-62 400 endpoint	.09½		.09½		.09½	
61-63 390 endpoint	.09¾		.09¾		.09¾	
64-66 375 endpoint	.10		.10		.10	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

NATURAL GASOLINE

OKLAHOMA (Group 3)—	Feb. 18		Feb. 11		Feb. 4	
Grade A, 72-79.9, 375 e.p., rec. 90%	.05½	.05⅝	.05½	.05¾	.05⅝	.05¾
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05¼		.05¼		.05	.05¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.04½		.04⅝	.04½	.04¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.04¼		.04¼		.04¼	
Grade C, 80-92, 375 e.p., rec. 78%	.04⅛	.04¼	.04	.04⅛	.04	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05½	.05¾	.05½	.05¾	.05⅝	.05¾
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05¼		.05¼		.05	.05¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.04½		.04⅝	.04½	.04¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.04¼		.04¼		.04	.04⅛
Grade C, 80-92, 375 e.p., rec. 78%	.04⅛	.04¼	.04	.04⅛	.04	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.05½	.05¾	.05½		.05½	
Grade BB, 84-92, 375 e.p., rec. 85%	.04½	.04¾	.04½		.04½	
Grade C, 80-92, 375 e.p., rec. 78%	.04¼	.04½	.04¼	.04½	.04½	
CALIFORNIA—						
75-78 375-390 endpoint	.08½	.09	.08½	.09	.08½	.09
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05⅝		.05¾		.05¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05¼		.05¼		.05	.05¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.04½		.04¼		.04½	
Grade BB, 84-92, 375 e.p., rec. 85%	.04¼		.04	.04⅛	.04⅞	.04¼
Grade C, 80-92, 375 e.p., rec. 78%	.04⅛		.04		.04	.04⅛

BURNING OIL

OKLAHOMA (Group 3)—	Feb. 18		Feb. 11		Feb. 4	
41-43 water white kerosene	.04⅛	.04⅜	.04	.04¼	.04	.04¼
41-44 water white kerosene	.04⅜	.04½	.04¼	.04½	.04¼	.04½
NORTH TEXAS—						
41-43 water white kerosene	.04		.04		.04	
40-42 water white kerosene	.03⅞	.04	.03⅞	.04	.03¾	.04
***NORTH LOUISIANA—**						
41-43 water white kerosene	.05		.05		.05	
***ARKANSAS—**						
41-43 water white kerosene	.05		.05		.05	
PENNSYLVANIA—						
43 Kerosene prime white	.05½	.05¾	.05½	.05¾	.05¾	.06
45 Kerosene water white	.05¾	.06	.05¾	.06	.06	.06¼
46 Kerosene water white	.06	.06¼	.06¼	.06½	.06¼	.06⅜
47 Kerosene water white	.06¼	.06½	.06¼	.06½	.06½	.06¾
300 Mineral Seal	.07	.07¼	.07	.07¼	.07	.07¼
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.05	.05½	.05	.05½	.05	.05½
Engine distillate, 43-44, 445 endpoint	.07	.07½	.07	.07½	.07	.07½
Engine distillate, 42-44, 480 endpoint	.06¾	.07¼	.06¾	.07¼	.06¾	.07¼
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.04	.04¼	.04	.04¼	.04	.04¼
42-44 water white kerosene	.04¼	.04¾	.04¼	.04¾	.04¼	.04¾
GULF COAST (Export)—						
41-43 prime white	.07		.07		.07	
41-43 water white	.08		.08		.08	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

OKLAHOMA (Group 3)—	Feb. 18		Feb. 11		Feb. 4	
Below 18 Fuel Oil, per bbl.	.70	.80	.70	.80	.70	.80
18-22 Fuel Oil, per bbl.	.75	.85	.75	.85	.75	.85
20-22 Fuel Oil, per bbl.	.80	.85	.85		.85	
22-26 Fuel Oil, per bbl.	.82½	.87½	.85	.90	.85	.95
24-26 Fuel Oil, per bbl.	.90	.95	.90	.95	.95	1.00
26-30 Fuel Oil, per bbl.	.95	1.00	.95	1.05	1.00	1.05
28-30 Fuel Oil, per bbl. (industrial)	1.05	1.10	1.05	1.15	1.10	1.20
32-36 Gas Oil (industrial)	.02⅝	.02⅞	.02¾	.02⅞	.02¾	.03
32-36 Gas Oil (straw color)	.03	.03⅛	.03	.03⅛	.03⅛	.03¼
36-38 Distillate	.03⅛	.03⅜	.03¼	.03⅜	.03¼	.03⅜
38-40 Straw Distillate	.03⅜	.03¾	.03⅜	.03¾	.03⅜	.03¾
NORTH TEXAS—						
Below 20 Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
24-26 Fuel Oil, per bbl.	.80	.90	.80	.90	.85	.90
32-36 Gas Oil (straw)	.02½	.02¾	.02½	.02¾	.02⅝	.02¾
38-40 Straw Distillate	.03⅛	.03¼	.03⅛	.03⅜	.03⅜	.03½
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.85	.90	.85	.90	.85	.90
30-32 Gas Oil	.03	.03¼	.03	.03½	.03¼	.03½
***ARKANSAS—**						
33-36 Distillate	.03¼	.03¾	.03¼	.03¾	.03⅝	.04
30-32 Gas Oil	.03	.03¼	.03	.03¼	.03¼	.03½
16-22 Refinery Fuel Oil, per bbl.	.85	.90	.85	.90	.85	.90
GULF COAST (South Texas)—						
Gas Oil	.03¾	.04	.03¾	.04	.03¾	.04
Bunker C Fuel (cargo lots), per bbl.	.65	.70	.65	.70	.65	.70
Bunker C Fuel (small lots)	.95	1.00	.95	1.00	.95	1.00
PENNSYLVANIA—						
30-34 Fuel Oil	.04½	.04¾	.04½	.04¾	.04½	.04¾
36-40 Fuel Oil	.04¾		.04¾		.04¾	.05
CALIFORNIA—						
33-36 Distillate	.03½	.04	.03½	.04	.03½	.04
26-32 Distillate	.02	.02½	.02	.02½	.02	.02½
15-20 Fuel Oil, Bunker (at tidewater)	.70	.80	.70	.80	.70	.80
15-20 Fuel Oil, (cargo lots), per bbl.	.60	.75	.60	.75	.60	.75
27 plus Diesel, per bbl.	.90	1.05	.90	1.05	.90	1.05
CHICAGO DISTRICT (Based on Group 3)—						
22-26 Fuel Oil, per bbl.	.90	.95	.90	.95	.90	.95
18-22 Fuel Oil, per bbl.	.80	.85	.77½	.85	.82½	.85
28-30 Fuel Oil, per bbl.	1.10	1.15	1.12½	1.20	1.12½	1.20
32-36 Gas Oil (zero)	.03⅛	.03¼	.03⅛	.03⅜	.03¼	.03⅜
32-36 Gas Oil (industrial)	.02½	.02⅝	.02½	.02⅝	.02⅝	.02⅞
36-38 Distillate	.03	.03¼	.03	.03¼	.03½	.03⅝
38-40 Straw Distillate	.03¼	.03½	.03¼	.03½	.03⅝	.03¾

*Louisiana, Arkansas, Mississippi and East Texas delivery.

LUBRICATING OIL AND WAX

OKLAHOMA (Group 3)—	Feb. 18		Feb. 11		Feb. 4	
100 vis., 2 color, 20-25 cold test	.06¾	.07	.06¾	.07	.06¾	.07
100 vis., 3 color, 20-25 cold test	.05¾	.06	.05¾	.06	.05¾	.06
150 vis., 3 color, 20-25 cold test	.08¼	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.07¾	.08	.07¾	.08	.07¾	.08
180 vis., 3 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
180 vis., 5 color, 23-28 cold test	.09	.09¼	.09	.09¼	.09	.09¼
200 vis., 3 color, 23-28 cold test	.10¾	.11	.10¾	.11	.10¾	.11
200 vis., 4 color, 23-28 cold test	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 5 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
240 vis., 3 color, 25-30 cold test	.14¼	.14½	.14¼	.14½	.14¼	.14½
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 5 color, 25-30 cold test	.12¾	.13	.12¾	.13	.12¾	.13
280 vis., 3 color, 25-30 cold test	.16¾	.17	.16¾	.17	.16¾	.17
280 vis., 4 color, 25-30 cold test	.15¾	.16	.15¾	.16	.15¾	.16
280 vis., 5 color, 25-30 cold test	.14¾	.15	.14¾	.15	.14¾	.15
Cylinder Stocks:						
600, steam refined, light green	.10	.12	.10	.12	.10	.12
600, steam refined, dark green	.09	.11	.09	.11	.09	.11
190-200 vis., D color Bright Stock	.41	.42	.41	.42	.41	.42
150-160 vis., D color Bright Stock	.37		.37		.37	
150-160 vis., E color Bright Stock	.32	.35	.32	.35	.32	.35
Waxes:						
124-126 White Crude Scale Wax	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom	.07½	.07¾	.07½	.07¾	.07½	.07¾
36 Miners' Neutral	.07¼	.07½	.07½	.07½	.07¼	.07½
150, 3 color	.15½	.16	.15½	.16	.15½	.16
180, 3 color	.21½	.22	.21½	.22	.21½	.22
200, 3 color	.25	.25½	.24½	.25	.24½	.25
220, 3 color	.29½	.30	.29½	.30	.29½	.30
600, steam refined	.22½	.23	.22½	.23	.22½	.23
635, steam refined	.28½	.29	.28½	.29	.28½	.29
650, steam refined	.29½	.30	.29½	.30	.29½	.30
600, Pennsylvania Flash	.29½	.30	.30½	.31	.30½	.31
630, Pennsylvania Flash	.34½	.35	.34½	.35	.34½	.35
600, E filtered	.30½	.31	.30½	.31	.30½	.31
600, D filtered	.34½	.35	.34½	.35	.34½	.35
Pennsylvania Bright Stocks	.41½	.42	.42		.41	.42
*122-124 White Crude Scale Wax	.03⅛		.03⅛		.03	.03⅛
124-126 White Scrude Scale Wax	.03¼		.03¼		.03⅛	.03¼

*At New York.

GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.06¼	.06½	.06¼	.06½	.06¼	.06½
No. 3 color, 200 vis., pale oil	.09¼	.09½	.09¼	.09½	.09¼	.09½
No. 3 color, 300 vis., pale oil	.10¾		.10¾	.11	.10¾	.11
No. 3½ color, 500 vis., pale oil	.11½	.12	.11½	.12	.11½	.12
No. 4 color, 750 vis., pale oil	.13¼	.13½	.13¼	.13½	.13¼	.13½
No. 5 color, 1200 vis., pale oil	.16					
No. 5 to 6 color, 1200 vis., pale oil	.15					
No. 5 to 6 color, 200 vis., red oil	.08¼	.08¾	.08¼	.08¾	.08½	.08¾
No. 5 to 6 color, 300 vis., red oil	.09½	.10	.09½	.10	.09½	.10
No. 5 to 6 color, 500 vis., red oil	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
No. 5 to 6 color, 750 vis., red oil	.12¾		.12¾	.13	.12¾	.13
No. 2½ color, 200 vis., pale filtered	.11	.12	.11	.12	.11	.12
No. 2½ color, 300 vis., pale filtered	.12	.13	.12	.13	.12	.13
No. 2½ color, 500 vis., pale filtered	.14½	.15	.14½	.15	.14½	.15
No. 2½-3 color, 750 vis., pale filtered	.17	.19	.17	.19	.17	.19
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.10½	.10¼	.10½	.10¼	.10½

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

200 vis., 2½-3 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
300 vis., 3-3½ color	.13	.13½	.13	.13½	.13	.13½
350 vis., 3½-4 color	.13½	.13¾	.13½	.13¾	.13½	.13¾
400 vis., 3½-4 color	.15	.15½	.15	.15½	.15	.15½
Red Neutral:						
200 vis., 4½-5 color	.11	.11¼	.11	.11¼	.11	.11¼
300 vis., 5-6 color	.12	.12¼	.12	.12¼	.12	.12¼
400 vis., 5-6 color	.13¼	.14	.13¼	.14	.13¼	.14
500 vis., 4½-5 color	.14¼	.15½	.14¼	.15½	.14¼	.15½
500 vis., 5-6½ color	.15	.15¼	.15	.15¼	.15	.15¼
600 vis., 6½ plus color	.16	.16¼	.16	.16¼	.16	.16¼

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Feb. 18		Feb. 11		Feb. 4	
Gasoline, U. S. Motor, 58-60, 437	.08½	.08¾	.08⅝	.08¾	.08⅝	.08¾
Kerosene, water white, 41-43	.07¾		.07¾		.07¾	
*Fuel Oil, Bunker "C," 14-16, per bbl.	1.05		1.05		1.05	
†Fuel oil, Diesel, 28-30, per bbl.	2.00		2.00		2.00	
Gas Oil, 32-36 gravity	.04¾	.05¼	.04¾	.05¼	.04¾	.05¼
25 pale Paraffin Oil	.10½		.10½		.10½	
28 pale Paraffin Oil	.07¼		.07¼		.07¼	
285 red Paraffin Oil	.12½		.12½		.12½	
250 red Paraffin Oil	.11½		.11½		.11½	
225 red Paraffin Oil	.10		.10		.10	
200 red Paraffin Oil	.09¼		.09¼		.09¼	
Refined Wax:						
120-122 a.m.p., per lb.	.03⅞		.03⅞		.03⅞	
125-127 a.m.p., per lb.	.04⅛		.04⅛		.04⅛	
130-132 a.m.p., per lb.	.04⅝		.04⅝		.04⅝	
133-135 a.m.p., per lb.	.05⅛		.05¾		.05¾	
135-137 a.m.p., per lb.	.05¾		.05⅞		.05⅞	
Petrolatum in barrels, carload lots, per pound:						
Dark Green	.01⅞		.01⅞		.01⅞	
Amber	.03⅛		.03⅛		.03⅛	
Extra Amber	.03½		.03½		.03½	
Cream	.06⅜		.06⅜		.06⅜	
Lily White	.07		.07		.07	
Snow White	.08⅜		.08⅜		.08⅜	

*Lighterage 5.0 cents a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Feb. 18		Feb. 11		Feb. 4	
Kerosene, prime white	.07¾		.07¾		.07¾	
Kerosene, water white	.09		.09		.09	
600, steam refined cylinder stocks, in bbls.	.30	.31	.30	.31	.30	.31
635, steam refined	.32	.33	.32	.33	.32	.33
650, steam refined	.36	.37	.36	.37	.36	.37
600, Pennsylvania Flash	.40		.40		.40	
630, Pennsylvania Flash	.43		.43		.43	
600, Warren E	.39½		.39½		.39½	
600, Oil City E	.38½		.38½		.38½	
Light 140-150 Bright Stocks	.49½	.50	.49½	.50	.49½	.50
Dark 140-150 Bright Stocks	.48½	.49	.48½	.49	.48½	.49

LOS ANGELES EXPORT PRICES

	Feb. 18		Feb. 11		Feb. 4	
Kerosene, water white	.04½	.05	.04½	.05	.04½	.05
U. S. Motor Gasoline, 53-55, 437 e.p.	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Oklahoma City—Same as other Mid-Continent price schedule except Empire Pipe Line Co. posts all oil 40 gravity and above at $1.33 on February 15, 1930.

Corsicana heavy (Jan. 16, 1930)*.....$ .70
Other fields.....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties—See gravity table.

WEST TEXAS

Iatan*.....Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler and Mitchell.....See gravity table, column 3
Howard and Glasscock .....See gravity table, column 11
Chalk† .....$ .65

*Includes Westbrook Field.
†Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover, below 24 gravity (May 20, 1929) .....$ .85
Smackover, 24 gravity and above (May 20, 1929) 1.00
Cotton Valley, below 36 gravity (Jan. 17, 1930) ..... .80
Bellevue (Jan. 17, 1930) 1.05
Urania (Jan. 16, 1930) ..... .85
East El Dorado (May 22, 1929) ..... .85
Other fields.....See gravity table

Cotton Valley crude about 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Smackover, Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co.

GULF COAST

Grade A (Jan. 15, 1930)*.....$1.05
Grade B.....See gravity table
Jennings, La. (Jan. 15, 1930)† 1.00
Refugio (Jan. 20, 1930)¶..... .55
Sorrento (Jan. 15, 1930)‡ 1.00
Markham (Jan. 15, 1930)§..... .75
High Island (Jan. 15, 1930)¶..... .85

*Humble Oil & Refining Co. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. §The Texas Pipe Line Co. ¶Posted by Gulf Coast Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.
(Effective Feb. 15, 1930)

Rock Creek, Wyo. $1.25
Salt Creek .....See gravity table
Big Muddy $1.33
Grass Creek, heavy (July 27, 1928) ..... .90
Grass Creek, light 1.45
Mule Creek (May 21, 1929) 1.20
Elk Basin 1.45
Lance Creek 1.53
Poison Spider (March 14, 1927)..... 1.00
Notches (March 14, 1927) ..... .65
Rex Lake (February 22) 1.10
Osage (May 21, 1929) 1.65
Lost Soldier (contract, May 22) 1.05
Hamilton Dome (March 14, 1927) ..... .85
Pedro (May 21, 1929) 1.25
Greybull (May 21, 1929) 1.65
Four Bear (May 21, 1929) ..... .85
Cat Creek (Montana) (Feb. 15, 1930) .. 1.45
Sunburst (Montana) (Feb. 15, 1930) ... 1.65
Torchlight (May 21, 1929) 1.65
Hogback (New Mexico) (May 21, 1929) 1.70
Artesia (New Mexico) (Feb. 15, 1930).. 1.90

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin.

SOUTH CENTRAL AND SOUTH-WESTERN TEXAS

Darst Creek (Jan. 15, 1930)*.....$1.05
Luling (Jan. 16, 1930)*..... .75
Mirando (Jan. 15, 1930)†..... .75

(Continued on Page 150)

CRUDE OIL GRAVITY TABLE

Gravity—	1 Okla., Kans., N. C. Texas	2 No. La. and Arkansas	3 Crane, Upton, Crockett, Winkler Pecos, Mitchell, (West Texas) Lea, N. Mex.	4 Stephens, Ark.	5 Wheeler (Texas Panhandle)	6 Gray County (Texas Panhandle)	7 Carson and Hutchinson (Texas Panhandle)	8 Salt Creek, Wyo.	9 Grade B and Light Crude (G. Coast)	10 Somerset (South Central Texas)	11 Howard and Glasscock, W. Tex.
24 and above	....	....	....	....	....	....	....	....	....	....	....
Below 24	....	....	....	....	....	....	....	....	....	....	....
Below 25	.60	....	.55	....	....	....	....	....	....	....	.55
25 to 25.9	.66	....	.58	....	....	....	....	....	.3	....	.58
26 to 26.9	.72	....	.61	....	....	....	....	....	.96	....	.61
27 to 27.9	.78	....	.64	....	....	....	....	....	.99	....	.64
Below 28	....	.78	....	.90	.70	.69	.72	....	....	....	....
28 to 28.9	.84	.84	.67	.94	.70	.69	.72	....	1.02	....	.66
29 to 29.9	.90	.90	.70	.98	.70	.75	.72	.90	1.05	....	.68
30 to 30.9	.96	.96	.73	1.02	.76	.81	.72	.96	1.08	....	.70
31 to 31.9	1.02	1.02	.76	1.06	.82	.87	.72	1.02	1.11	....	.72
32 to 32.9	1.08	1.08	.79	1.10	.88	.93	.78	1.08	1.14	1.05	.74
33 to 33.9	1.11	1.11	.82	....	.91	.96	.81	1.11	1.17	1.07	.76
34 to 34.9	1.14	1.14	.85	....	.94	.99	.84	1.14	1.20	1.09	.78
35 to 35.9	1.17	1.17	.88	....	.97	1.02	.87	1.17	1.23	1.11	.80
36 to 36.9	1.20	1.20	.91	....	1.00	1.05	.90	1.20	....	1.13	.82
37 to 37.9	1.23	1.23	....	....	1.03	1.08	.93	1.23	....	1.15	....
38 to 38.9	1.27	1.26	....	....	1.06	1.11	.96	....	....	1.17	....
39 to 39.9	1.30	1.29	....	....	1.09	1.14	.99	....	....	....	....
40 to 40.9	1.33	1.32	....	....	1.12	1.17	1.02	....	....	....	....
41 to 41.9	1.36	1.35	....	....	1.15	1.20	1.05	....	....	....	....
42 to 42.9	1.39	1.38	....	....	1.18	1.23	1.08	....	....	....	....
43 to 43.9	1.41	1.41	....	....	1.21	1.26	1.11	....	....	....	....
44 and above	1.44	1.44	....	....	1.24	1.29	1.14	....	....	....	....

Column 1, Note—Above prices posted by Prairie Oil & Gas Co. on February 15, 1930; by Sinclair Oil & Gas Co. February 13, 1930. On January 15, 1930, Humble Oil & Refining Co. posted North Central Texas crude at following prices: Below 25 gravity 60 cents; a 6-cent differential added per degree to 32-32.9 gravity at $1.08 and a 3-cent differential above making 44 gravity and above at $1.44. The Carter Oil Co. posted this schedule for Oklahoma and Kansas, January 16. Same date Magnolia posted these prices in North Central Texas. On January 17, Magnolia posted the schedule for Oklahoma and Kansas.

North Central Texas—Includes Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Nocona and Moran Pools.

Column 2—Arkansas and North Louisiana—(Caddo, Bull Bayou, Crichton, Cotton Valley above 36 gravity, DeSoto, Haynesville, Homer and El Dorado only). Texas Pipe Line Co., January 15, 1930. Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Pipe Line Co., Magnolia Petroleum Co., January 16, 1930.

Column 3—Humble Oil & Refining Co., January 15, 1930, and Magnolia Petroleum Co., January 16, 1930.

Column 4—Atlantic Oil Producing Co. and Louisiana Oil Refining Corp., May 21, 1929.

Columns 5, 6 and 7—Humble Oil & Refining Co., January 15, 1930, and Magnolia Petroleum Co., January 16, 1930. Adopted by Prairie Oil & Gas Co., February 15.

Column 8—Midwest Refining Co., February 15, 1930. All crude over 37 gravity $1.23 per barrel.

Column 9—Humble Oil & Refining Co., January 15, 1930 (schedule ends 35 and above).

Column 10—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

Column 11—Humble Oil & Refining Co., January 15, 1930, Magnolia posted Howard-Glasscock crude same schedule as West Texas, January 16, 1930.

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective January 18, 1929)

Gravity—	1 Salt Lake, Newport, Summerland, Lawndale, Los Angeles, Fullerton, Richfield, Torrance, Olinda-Brea, Alamitos Heights, Huntington Beach, Signal Hill (Nov. 8) Athens, Inglewood, Rosecrans-Dominguez, Watsonville	2 Whittier, La Habra, Coyote Hills	3 Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills	4 Montebello	5 Santa Fe Springs (Nov. 8)	6 Santa Maria, Coalinga	7 Wheeler Ridge Fruitvale	8 Orcutt, Ventura, Rincon	9 Ventura Ave., (Nov. 8)	10 Elwood Terrace	11 Seal Beach (Nov. 4)
14 to 14.9	.70	.70	.50	.70	....	.50	.50	.55	.70	....	.70
15 to 15.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....	.70
16 to 16.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....	.70
17 to 17.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....	.70
18 to 18.9	.75	.75	.56	.70	....	.56	.56	.70	.75	....	.75
19 to 19.9	.80	.80	.62	.75	....	.62	.62	.70	.80	....	.80
20 to 20.9	.85	.84	.68	.80	....	.68	.68	.70	.85	....	.85
21 to 21.9	.89	.88	.74	.85	.89	.74	.74	.86	.86	....	.89
22 to 22.9	.93	.91	.80	.90	.92	.80	.80	.87	.87	....	.93
23 to 23.9	.97	.94	.85	.95	.95	.85	.85	.90	.90	....	.97
24 to 24.9	1.01	.97	.90	.98	.98	.88	.88	.94	.94	....	1.01
25 to 25.9	1.05	1.00	.95	1.01	1.01	.91	.91	.98	.98	....	1.05
26 to 26.9	1.09	1.04	1.00	1.04	1.04	.94	.94	1.02	1.02	....	1.09
27 to 27.9	1.13	1.08	1.05	1.07	1.07	.98	.97	....	1.06	....	1.13
28 to 28.9	1.17	1.12	1.10	1.10	1.10	1.02	....	....	1.10	....	1.17
29 to 29.9	1.21	1.16	1.16	1.13	1.15	1.06	....	....	1.14	....	1.21
30 to 30.9	1.25	1.20	1.22	1.16	1.20	1.10	....	....	1.18	....	1.25
31 to 31.9	1.30	....	1.28	....	1.25	1.14	....	....	1.23	....	1.30
32 to 32.9	1.35	....	1.34	....	1.30	1.18	....	....	1.28	....	1.35
33 to 33.9	1.41	....	1.40	....	1.35	1.22	....	....	1.34	....	....
34 to 34.9	1.47	....	1.46	....	1.40	1.26	....	....	1.40	1.16	....
35 to 35.9	1.53	....	....	....	1.45	1.30	....	....	1.46	1.22	....
36 to 36.9	1.59	....	....	....	1.50	....	....	....	1.52	1.28	....
37 to 37.9	1.65	....	....	....	1.55	....	....	....	1.58	1.34	....
38 to 38.9	1.71	....	....	....	1.60	....	....	....	1.64	1.40	....
39 to 39.9	1.77	....	....	....	1.65	....	....	....	1.70	1.46	....
40 to 40.9	1.83	....	....	....	....	....	....	....	1.76	1.52	....
41 to 41.9	1.89	....	....	....	....	....	....	....	1.82	1.58	....
42 to 42.9	1.95	....	....	....	....	....	....	....	1.88	1.64	....

Kern River, Newhall-McKittrick, Mount Poso and Round Mountain 11 to 13.9 gravity 45 cents, 14 gravity and above 50 cents, effective October 2, 1929. On December 1, 1928, the Union Oil Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 45 cents; 14 gravity and above 50 cents.

Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity; Dominguez and Athens-Rosecrans, 24 to 42.9 gravity.

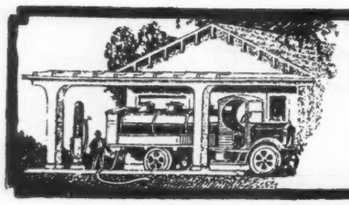
Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midwest-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 45 cents.

Column 6—Oil below 14 gravity posted at 45 cents.

Columns 8 and 9—Posted by Union Oil Co. only.

Kettleman Hills, 55 gravity and above, $1.65 (posted by Standard Oil Co. of California).



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Feb. 18

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago†	17 0	18.0	3.0	13.0
Decatur, Ill.	17.2	18.2	3.0	13.1
E. St. Louis	16.4	17.4	3.0	12.2
Joliet	17.4	18.4	3.0	13.3
Peoria	17.2	18.2	3.0	13.1
Quincy	17.2	18.2	3.0	12.9
Davenport, Ia.	17.5	18.5	3.0	13.3
Des Moines	17.5	18.5	3.0	13.3
Keokuk	17.5	18.5	3.0	13.3
Sioux City	17.1	18.1	3.0	12.9
Duluth, Minn.	18.5	19.5	3.0	13.9
Mankato	18.1	19.1	3.0	13.7
Minneapolis	18.2	19.2	3.0	13.9
LaCrosse, Wis.	17.2	18.2	2.0	14.0
Milwaukee	16.1	17.1	2.0	12.9
Madison	16.3	17.3	2.0	13.1
Detroit, Mich.	17.8	18.8	3.0	14.7
Grand Rapids	17.7	18.7	3.0	14.6
Saginaw	17.9	18.9	3.0	14.8
Evansville, Ind.	18.0	19.0	4.0	14.0
Fort Wayne	18.4	19.4	4.0	14.4
Indianapolis	18.2	19.2	4.0	14.2
South Bend	18.4	19.4	4.0	14.4
Fargo, N. D.	19.9	21.9	3.0	15.9
Huron, S. D.	19.3	21.3	4.0	14.7
Sioux Falls	18.1	19.1	4.0	14.4
K. C., Mo.*	16.9	17.9	3.0	11.6
Springfield*	16.8	17.8	3.0	12.5
St. Louis*	15.9	16 9	2.5	12.3
St. Joseph	16.5	17.5	2.0	12.2
Wichita, Kans.	15.8	14.8	3.0	11.8
Bartlesville, Ok.	16.5	17.5	4.0	11.5

*State tax 2 cents; remainder city tax.
†Effective February 20, discounts on Q.D.A. in Chicago district 2 cents off service station price on purchases of 500 gallons or more per month and 4 cents on purchases of 1,000 gallons or more per month.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	14.7	12.9
V. M. & P. Naphtha	16.7	13.9
Cleaner's naphtha	17.0	14.9
Stanisol	17.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 349 gallons	8.0
850 gallons or more	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline; 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	17.0	21.0	4.0	12.0
Fort Worth	17.0	20.0	4.0	12.0
Houston	15.0	19.0	4.0	11.0
San Antonio	15.0	19.0	4.0	11.0
El Paso	16.0	20.0	4.0	14.0
Texarkana	17.0	19.0	4.0	12.0
Muskogee*	14.0	16.0	4.0	10.0
Okla. City*	15.0	18.0	4.0	10.0
Tulsa*	15.0	19.0	4.0	10.0
Ft. Smith, Ark.	15.0	17.0	5.0	12.0
Little Rock	18.0	20.0	5.0	13.0

*Gasoline tank wagon price to dealers 2 cents under posted tank wagon.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	18.0	21.0	4.0	15.5
Pueblo	18.0	21.0	4.0	15.5
Grand Junction	22.0	25.0	4.0	19.0
Casper, Wyo.	18.0	21.0	4.0	14.0
Cheyenne	19.5	22.5	4.0	15.5
Butte, Mont.	23.5	26.5	5.0	20.0
Helena	23.5	26.5	5.0	20.0
Salt Lake, Utah	20.0	23.0	3.5	17.0
Albu'que, N. M.	20.0	22.0	5.0	17.0
Boise, Idaho	22.5	25.5	4.0	19.0
Twin Falls	22.5	25.5	4.0	19.0

PENNSYLVANIA—DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	15.0	*21.0	...	13.0
Philadelphia	15.0	*21.0	...	13.0
Scranton	15.0	*21.0	...	13.0
Allentown	15.0	*21.0	...	13.0
Altoona	15.0	*21.0	...	13.0
Erie	15.0	*19.0	...	13.0
Dover, Del.	18.0	20.0	3.0	13.0
Wilmington	18.0	20.0	3.0	13.0
Springf'd, Mass.	16.5	18.5	2.0	13.5
Worcester	16.3	18.3	2.0	13.3
Boston	15.5	17.5	2.0	12.5
Providence, R.I.	15.7	17.7	2.0	12.7
Hartford, Conn.	16.5	18.5	2.0	13.5
New Haven	16.6	18.6	2.0	13.6

*Includes tax of 4.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State. The Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. The Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	16.6	19.6	2.0	14.6
New York*	15.3	17.3	2.0	13.3
Buffalo	15.8	17.8	2.0	13.8
Rochester	16 0	18.0	2.0	13.0
Syracuse	16.8	18.8	2.0	13.8
Boston, Mass.	15.5	17.5	2.0	12.5
Augusta, Me.	18.8	20.8	4.0	13.8
Manch't'r, N.H.	18.4	20.4	4.0	13.4
Burlington, Vt.	19.3	21.3	4.0	14.3

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	20.0	21.0	4.0	15.5
Augusta	21.0	23.0	4.0	15.5
Macon	21.0	23.0	4.0	15.5
Savannah	20.0	22.0	4.0	14.0
Birm'ham, Ala.	17.0	19.0	4.0	13.0
Mobile	18.0	20.0	4.0	13.5
Montgomery	19.0	21.0	4.0	15.0
Clarks'le, Miss.	18.0	20.0	5.0	12.5
Jackson	19.0	21.0	5.0	13.0
Natchez	18.5	20.5	5.0	13.0
Gulfport	20.5	22.5	5.0	13.0
Vicksburg	18.5	20.5	5.0	13.0
Jack'ville, Fla.	20.0	24.0	6.0	14.0
Miami	21.0	23.0	6.0	14.0
Pensacola	18.0	20.0	6.0	13.5
Tampa	20.0	22.0	5.0	13.0
Lexington, Ky.	18.0	20.0	5.0	14.5
Covington	19.0	20.0	5.0	14.5
Louisville	19.0	21.0	5.0	13.0
Ashland	20.0	21.0	5.0	15.0
Catlettsburg	20.0	21.0	5.0	15.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. Pensacola and Mobile taxes include 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.
Effective April 2, price to dealers 2 cents under posted tank wagon price.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
San Francisco	20.0	23.0	3.0	15.5
Los Angeles	19.5	22.5	3.0	15.5
Reno, Nev.	25.0	28.0	4.0	19.0
Portland, Ore.	26.5	24.5	3.0	16.5
Seattle, Wash.	20.5	23.5	3.0	16.5
Tacoma	20.5	23 5	3.0	16.5
Spokane	24.5	27.5	3.0	20.5
Phoenix, Ariz.	18.0	22.0	4.0	20.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	18.25	20.25	4.0	13.25
McCook	19.75	21.75	4.0	14.75
Norfolk	18.75	20.75	4.0	13.75
N. Platte	19.75	21.75	4.0	14.50
Scottsbluff	19.75	21.75	4.0	14.25

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlantic City	16.5	18.5	2.0	13.5
Newark, N. J.	15.5	17.5	2.0	12.5
Annapolis, Md.	18 0	20.0	4.0	13.0
Baltimore	17.2	19.2	4.0	10.5
Cumberland	19.0	21.0	4.0	14.0
Washington	15.7	17.7	2.0	12.7
Danville, Va.	19.8	21.8	5.0	13.8
Norfolk	18.3	20 3	5.0	11.0
Petersburg	19.3	21.3	5.0	13.3
Roanoke	20.0	22.0	5.0	14.0
Richmond	18.7	20.7	5.0	12.7
Charles'n, W.Va.	18.5	20.5	4.0	13.5
Keyser	19.1	21 1	4.0	14.1
Parkersburg	17.2	19.2	4.0	12.2
Wheeling	18.4	20.4	4.0	13.4
Charlotte, N. C.	20.3	22.0	5.0	14.3
Hickory	20.8	22.8	5.0	14.8
Mt. Airy	20.5	22 5	5.0	14.5
Salisbury	20.7	22.7	5.0	14.7
Charleston, S.C.	19.3	21.3	6.0	12.3
Columbia	21.2	23.2	6.0	14.2

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points*	18.0	19.0	4.0	†12.0

*Dealers and commercial accounts 2 cents under tank wagon.
†Service station price 14 cents.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	15.0	16 0	5.0	12.0
Baton Rouge	16.0	18.0	4.0	14.0
Alexandria	17.0	19.0	5.0	14.0
Lafayette†	18.0	20.0	5.0	14.0
Lake Charles†	18 0	20.0	5.0	14.0
Shreveport	16.0	18.0	4.0	14.0
Knoxv'le, Tenn.	20.0	22.0	5.0	16.0
Memphis	18.0	20.0	5.0	12.5
Chattanooga	20.0	22.0	5.0	13.0
Nashville	19.0	21 0	5.0	16.0
Bristol	19.0	20.0	5.0	14.0
Lt. Rock, Ark.	18.0	20.0	5.0	13.0

*Tax of 5 cents includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.
†Includes 1-cent parish tax.

TANK WAGON CHANGES

Magnolia Petroleum Co. advanced gasoline tank wagon and service station prices 1 cent at Muskogee, Okla.

Atlantic Refining Co., effective February 10, made reductions in gasoline tank wagon and service station and kerosene tank wagon prices in Massachusetts, Rhode Island and Connecticut. Reductions were not uniform. Same company reduced gasoline tank wagon prices at these points 1 cent effective February 11.

Standard Oil Co. of New York, effective February 11, reduced gasoline tank wagon prices 1 cent in New York and New England states.

Standard Oil Co. of Indiana, effective February 17, reduced gasoline tank wagon and service station prices 2 cents in entire territory consisting of 10 states in the Middle West. No reductions were made at points where prices were below normal.

Standard Oil Co. of Nebraska reduced gasoline tank wagon and service station prices 2 cents in Nebraska. No reductions where prices were below normal.

CRUDE OIL PRICE CHANGES

Dixie Pipe Line Co., effective February 13, reduced Muskegon, Mich., crude oil to prices effective in Mid-Continent fields as posted by the Sinclair Oil & Gas Co.

Sinclair Oil & Gas Co., effective February 13, adopted schedules in Texas which were made effective by the Humble Oil & Refining Co. January 15 and in Oklahoma and Kansas schedules which were posted by the Carter Oil Co. effective January 16. Prairie Oil & Gas Co. and the remaining major purchasers adopted same schedules effective February 15.

Ohio Oil Co., effective February 15, reduced Lima, Indiana, Illinois, Princeton and Wooster crudes 15 cents, Plymouth, 10 cents, and Western Kentucky, 18 cents. Same company, on same date, reduced Elk Basin and Grass Creek, Wyo., crudes 20 cents, Big Muddy 10 cents, Lance Creek and Rock River 15 cents, Sunburst, Mont., 10 cents and Artesia, N. M., 8 cents.

Midwest Refining Co., effective February 15, reduced Cat Creek, Mont., crude 20 cents and reduced Salt Creek, Wyo., crude based on gravity scale.

Joseph Seep Purchasing Agency reduced all grades of Pennsylvania crude oil 25 cents; Somerset grade in Eureka lines 9 cents, Somerset in Cumberland lines 18 cents and Wayne district 18 cents.

Joseph Seep Purchasing Agency reduced Corning crude oil in Buckeye pipe line 15 cents.

CRUDE OIL PRICES

(Continued from Page 149)

Salt Flat (Jan. 15, 1930)§	1.05
Rockdale Minerva (April 15):	
Below 28 gravity	1.25
28-38.9 gravity	1.27
39-39.9 gravity	1.29
40 and above	1.31
Thrall‡	
Callihan (May 15)	1.75
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

*Posted by Magnolia Petroleum Co.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.
‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
§Humble Oil & Refining Co.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective Feb. 17, 1930)

Penna Grade Oil in New York Transit Lines (New York)	$2.80
Bradford District Oil in National Transit Lines (Pennsylvania)	2.80
Penna Grade Oil in National Transit Lines (Pennsylvania)	2.80
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	2.75
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.65
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.45
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 22, 1929)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Line (Feb. 17, 1930)	1.55
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines (Feb. 17, 1930)	1.65
Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (Feb. 17, 1930)	1.37
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (Jan. 29)	.60
Wayne district oil in Cumberland Pipe Lines (Feb. 17, 1930)	1.24

*Oil run prior to July 1, 1929, $2.95.

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective Feb. 15, 1930)

Lima	$1.65
Wooster	1.75
Illinois	1.60
Indiana	1.42
Princeton	1.60
Plymouth	1.18
Waterloo (November 17, 1926)	1.35
Western Kentucky	1.50
Dundee, Mich. (Feb. 13, 1930)‖	....Same as Mid-Continent gravity scale
Upper and Lower Traverse sands, Mich.‖	....Same as Mid-Continent gravity scale
Midland, Mich. (Feb. 6, 1930)*	1.25
Saginaw, Mich., Saginaw sand (February 10)†	1.89
Saginaw, Mich., Berea sand (February 10)†	1.79
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 15)†	1.50
Oil in line in Stoll Oil Refinery Co. in Oil City, Ky. (Jan. 20, 1930)§	1.55
Oil Springs (Canada) (Feb. 15, 1930)†	2.12
Petrolia (Canada) (Feb. 15, 1930)¶	2.15

*Posted by Pure Oil Co.
†Posted by Sun Oil Co.
‡Posted by Paragon Development Co.
§Posted by Stoll Oil Refining Co.
¶Posted by Imperial Oil Co., Ltd.
‖Posted by Standard of Indiana for boat shipment.

MEXICAN CRUDE

Panuco*	$ .65

*Based on January transactions.

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Oil Shares Develop Further Weakness

Increased Crude Production Exerts Disturbing Influence, Though Occasioned by Open-Flow Tests in California Fields

The oil shares, looked upon with uncertainty by traders on the stock exchange for months, fell to even lower levels this week when production of crude showed a daily increase of more than 57,000 bbls. As a matter of fact this rise was confined to California, where open-flow tests to ascertain potential production for proration purposes had pushed output figures to abnormal heights temporarily. There was little or nothing in the week's developments to warrant further depression of the oil issues and it was believed that such ground as was lost would be recovered quickly, although those in touch with stock exchange operations expressed the belief that further stabilization of the petroleum industry would have to be apparent before any marked rise in the prices of oil shares could be expected.

British-American Oil

In connection with the issue of $5,000,000 5 per cent convertible debentures of British-American Oil Co., Ltd., earnings are made public for the first time. For the year ended December 31, 1929, profit before depreciation and income taxes was $4,391,809, against $4,335,552 in 1928 and $3,010,823 in 1927. Net profit after depreciation and income taxes was $3,235,925, equivalent to $2.47 a share on 1,311,321 shares, present number of no-par shares outstanding before split-up, comparing with $3,214,705, or $2.45 a share, on above number of shares in 1928.

Balance sheet as of December 31, last, shows total assets of $26,076,047. Current assets were $10,763,652 against current liabilities of $2,895,213, leaving working capital of $7,868,439 after giving effect to issue of debentures.

Plymouth Oil Dividend

Plymouth Oil Co. declared a dividend of 50 cents, payable March 15 to stock of record March 5. Four months ago a similar payment was made.

Standard Oil of Kansas

Standard Oil Co. of Kansas declared the regular quarterly dividend of 50 cents, payable March 5 to stock of record February 28. Three months ago an extra dividend of 25 cents was paid.

Louisiana Oil Refining

The preliminary report of Louisiana Oil Refining Corp. and subsidiaries for year ended December 31, 1929, shows consolidated profit of $1,618,198 after interest, depreciation, depletion, drilling expenses, etc., but before federal taxes, comparing with $1,585,317 in 1928.

For the quarter ended December 31, profit was $91,311 before federal taxes, against $783,613 in preceding quarter. Capital stock consists of 40,000 shares (par $100) of 6½ per cent preferred and 1,187,678 no-par shares of common.

Northern Pipe Line

Report of the Northern Pipe Line Co. for the year ended December 31, 1929, shows net income of $140,017 after depreciation and taxes, equivalent to $3.50 a share (par $50) earned on 40,000 shares of stock. This compares with $399,632 or $9.99 a share in 1928.

British American Oil

At the annual meeting of shareholders of the British American Oil Co. of Toronto, authority will be asked for increase of the present 1,600,000 no-par shares into 3,200,000 no-par shares. Following the stock split, the new shares will be placed on a regular dividend basis of 20 cents quarterly.

Prairie Oil & Gas

The Prairie Oil & Gas Co. announces that a dividend of 50 cents per share has been issued by the company to be payable March 31, 1930, to stockholders of record February 28.

Associated Oil

More than 3,600 employes of the Associated Oil Co. have elected to participate in the stock purchase plan recently inaugurated by the Tide Water Associated Oil Co., C. R. Brown, assistant to the president of the Associated Oil Co., announced. This represents 88 per cent of Associated employes in service one year or more and, therefore eligible.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Saturday, was as follows:

Aug. 24	60.61	Nov. 22	47.76
Aug. 31	60.90	Nov. 29	48.60
Sept. 7	59.16	Dec. 4	50.60
Sept. 14	60.40	Dec. 11	50.51
Sept. 21	57.93	Dec. 18	49.24
Sept. 28	58.63	Dec. 24	47.36
Oct. 5	57.00	Dec. 31	48.86
Oct. 12	59.75	Jan. 8	48.56
Oct. 19	58.70	Jan. 15	48.38
Oct. 26	54.59	Jan. 22	47.13
Oct. 31	42.29	Jan. 29	47.45
Nov. 8	48.31	Feb. 5	48.13
Nov. 15	47.61	Feb. 12	47.49

Milmac Oil

The annual meeting of the Milmac Oil Co., held in the company's office in the Burk Burnett Building, Fort Worth, Tex., on February 4, resulted in the re-election of Max W. Ball, Paul McCune, F. L. Michaels, Jr., O. B. Swanson, F.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of New York Stock Exchange, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended February 11 Sales	Week ended February 11 High	Week ended February 11 Low	Week ended February 11 Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
21⅞	18	700	20	19	20	Amerada Corp.	(sh)	922,075	N.P.	50cQ	1-31-30	37⅝	27⅝	43⅞	27⅛	42⅝	17½
27⅛	20½	300	24½	23½	23½	American Republics Corp.	(sh)	209,180	N.P.	.....	3-20-29	82⅛	35⅛	85	51⅛	64¾	12½
37⅜	33½	10	33½	33½	33½	Associated Oil		$57,260,300	$25	50cQ	12-31-29	50¼	35	53⅜	37½	47¼	34½
41½	36¼	17,400	41½	40½	41½	Atlantic Refining		$50,000,000	$25	25cQ	12-16-29	131⅜	104	66⅜	50	77⅞	30
24¼	21⅝	13,600	22⅝	21⅝	21¾	Barnsdall Corp.		$45,235,650	$25	50cQ	12- 7-29	35½	20¾	53	20	49⅛	20
23⅞	21⅛	4,900	22	21½	21½	Continental Oil of Delaware	(sh)	4,741,554	N.P.	.....	3-31-27	..	..	..	..	47⅛	18
59¾	49⅛	16,600	59¾	55¾	59⅝	General Asphalt		$20,785,400	N.P.	50cQ	.....	96¾	65	94⅞	68	94¾	42¼
70½	52¼	2,500	68¾	66⅞	67½	Houston Oil		$25,000,000	$100	.....	.....	175¾	60⅛	167	79	109	26
23½	21¼	600	21⅞	21¾	21¾	Independent Oil & Gas	(sh)	1,333,572	N.P.	50cQ	1-31-30	32¾	17⅝	38⅜	21¾	39⅜	17¾
23¾	17¾	1,900	21⅝	21⅛	21¼	Indian Refining		$12,307,370	$10	.....	5-31-24	12⅛	7⅝	39⅝	9	53	13⅛
22½	21¼	200	22½	22½	22½	Lago Oil & Transport	(sh)	3,992,122	N.P.	.....	5- 1-27	37¾	20½	39⅛	27⅜	38⅜	16½
9½	8½	1,100	8¾	8½	8¾	Louisiana Oil Refining	(sh)	1,190,063	N.P.	.....	.....	18⅛	10	19¾	9⅜	18	7
6¾	5⅛	100	5⅛	5⅛	5⅛	Maracaibo Oil	(sh)	330,000	N.P.	.....	.....	22¾	12	25½	12½	18½	5⅛
21¾	16⅛	2,600	19¾	19¼	19½	Mexican Seaboard	(sh)	1,276,873	N.P.	.....	12-15-20	9¼	3	73	4⅝	69⅝	9¼
28	25	300	25¾	25⅝	25⅝	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	50cQ	12-15-29	39⅜	25½	44½	25⅛	39⅞	22⅛
..	..	No sales.				Middle States Oil		$24,298,850	$10	.....	7- 1-23	3¾	1⅝	7⅜	2⅜	5⅛	¾
..	..	No sales.				Pan American P. & T.		$50,084,700	$50	.....	10-20-27	65⅞	40⅛	54⅞	38¼	69	40½
60¼	50½	1,300	54⅝	53½	54⅝	Pan American P. & T. "B"		$121,105,050	$50	.....	11-15-24	66⅜	40¼	58⅞	37¾	69¼	40½
..	..	No sales.				Pan American Western "B"	(sh)	400,000	N.P.	.....	1-30-27	37⅞	16¾	28⅜	15½	18½	13⅜
..	..	No sales.				Panhandle P. & R.	(sh)	199,370	N.P.	.....	.....	18⅞	8	21¾	11½	15¼	3
..	..	No sales.				Panhandle P. & R. pfd.		$2,564,400	$100	.....	7- 2-23	83	54	108	70	76	47½
35	31⅛	2,400	32⅞	32¼	32⅞	Phillips Petroleum	(sh)	2,406,796	N.P.	50cQ	1- 2-30	60¼	36¼	53⅞	35¼	47	24¼
1¼	1	300	1⅛	1	1⅛	Pierce Oil Corp.		$29,622,831	$25	.....	.....	1⅛	½	5¼	½	3⅜	1
3	2¼	200	2½	2½	2½	Pierce Petroleum	(sh)	2,500,000	N.P.	.....	.....	5½	2½	7	3½	5⅞	½
52¼	48½	7,800	50¾	49	49½	Prairie Oil & Gas		$61,720,125	$25	50cQ*	12-31-29	55½	45⅝	68	46	65⅝	40½
60	58	1,400	59⅞	59⅛	59⅛	Prairie Pipe Line		$101,250,000	$25	75cQ†	12-31-29	190	130¾	280	172	65	45
9½	8	100	8	8	8	Producers & Refiners		$37,438,950	$50	.....	9-15-23	33⅞	16¾	29⅞	16	25⅞	4
..	..	No sales.				Producers & Refiners pfd.		$2,845,350	$50	.....	5- 1-25	50	36⅞	49⅝	41	46¾	25½
24⅜	22	800	23¼	23	23	Pure Oil		$75,959,250	$25	37½cQ	12- 2-29	33½	25	31⅝	19	30¾	20
26½	22⅞	900	23⅞	23⅝	23⅞	Richfield Oil		$47,964,650	$25	50cQ	11-15-29	28⅝	25⅜	56	23	49⅝	20
19½	17⅞	1,600	18¼	17⅞	18	Rio Grande Oil	(sh)	1,200,000	N.P.	$2.00A	7-25-29	..	..	37½	32	42½	15
54⅝	51½	4,300	51⅞	51½	51¾	Royal Dutch, N. Y.	(sh)	611,303	$1.873	.....	9-13-29	54½	44¼	64	44⅝	64	43⅛
47	45	20	45⅜	45⅜	45⅜	Shell Transport & Trading Co.		£19,654,274	£1	$1.45	7-23-29	48⅝	40½	47⅞	41⅜	57½	40⅝
23⅝	21⅜	7,200	22⅞	21⅜	22⅜	Shell Union Oil	(sh)	13,000,000	N.P.	35cQ	12-31-29	31¾	24⅝	39¼	23¼	31¾	19
28¼	22⅞	300	25½	25¼	25½	Simms Petroleum		$8,060,380	$10	40cQ	12-14-29	25⅜	14¼	27¼	18⅛	40⅛	15
25¾	23½	7,100	24	23¾	24	Sinclair Consolidated	(sh)	5,500,000	N.P.	50cQ	1-15-30	22⅜	15	46¾	17⅜	45	21
111	109	100	110	110	110	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	11-15-29	104½	97	110	102½	111	103
32¼	29⅞	500	30½	30¼	30¼	Skelly Oil		$27,237,750	$25	50cQ	12-16-29	37⅜	24⅛	42⅝	25	40½	28
61⅝	59	1,200	59⅞	59⅝	59⅞	Standard Oil of California	(sh)	12,594,098	N.P.	62½cQ	12-16-19	60¾	50⅜	80	53	81⅞	51½
66⅞	61⅞	10,600	62⅞	62½	62⅞	Standard Oil of New Jersey		$620,079,800	$25	25cQ*	12-16-29	41⅜	35⅛	59⅜	37⅜	83	48
33⅞	32	3,900	32½	32¼	32¼	Standard Oil of New York		$434,094,575	$25	40cQ	12-16-29	34⅛	29¾	44¼	28¾	48⅛	31¾
..	..	No sales.				Sun Oil	(sh)	1,297,627	N.P.	25cQ	12-16-29	34⅞	30	77	31½	86⅜	55
7⅜	5¾	200	6	6	6	Superior Oil Corp.	(sh)	2,324,938	N.P.	.....	12-20-20	..	..	..	..	24	5¼
56¼	52⅞	2,600	53⅝	53	53⅛	The Texas Corporation		$211,076,650	$25	75cQ	1- 1-30	58	45	74¾	50	71⅞	50
10¾	9¼	2,300	10	9⅝	10	Texas Pacific Coal & Oil Co.		$8,380,340	$10	2½%A‡	12-31-29	18⅞	12	26⅝	12⅛	23⅞	9½
..	..	No sales.				Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	12-31-29	29⅛	19	41½	19⅝	40	14
..	..	No sales.				Tide Water 5½% pfd.		$20,705,200	$100	$1.25Q	11-15-29	90⅛	85	100⅛	86	97½	85⅛
13¼	11¼	1,200	11½	11¼	11⅜	Tide Water Associated	(sh)	4,796,158	N.P.	30c8	2-15-30	19⅛	15¾	25	14¾	23½	10
84	80	300	80	80	80	Tide Water Associated pfd.		$72,844,300	...	$1.50Q	2- 2-30	..	..	..	..	90⅞	74⅛
10⅛	8¾	6,100	8⅞	8⅝	8¾	Transcontinental Oil	(sh)	3,742,029	N.P.	.....	.....	10⅜	3¾	14¾	7¼	15¼	5⅛
46¼	42⅝	3,400	43⅞	42⅞	43⅞	Union Oil of California		$94,798,100	$25	50cQ	11- 9-29	56½	39⅝	58	42⅜	57	42⅛
36¼	34	200	35⅛	35	35	Union Tank Car		$31,061,200	$100	$1.25Q	12- 2-29	127½	94	128⅛	110	163¾	121⅞
20⅞	16⅝	1,300	19⅛	18¾	19	Warner-Quinlan	(sh)	356,000	N.P.	50cQ	1- 2-30	34½	24½	44⅞	26	42⅞	15
..	..	No sales.				White Eagle Oil & Refining	(sh)	490,000	N.P.	50cQ	1-20-30	27½	20	38	20⅛	38	25
15	13¾	200	14	14	14	Wilcox Oil & Gas	(sh)	2,400,000	N.P.	.....	5-10-28	..	..	..	..	29¾	12⅞

*Plus extra dividend of 25 cents. †Plus extra dividend of 50 cents. ‡Payable in stock. x-Ex-dividend.

A. Douglass, H. C. Detrick and O. K. Detrick as directors, and the re-election of the following officers: Max W. Ball, chairman of the board; Paul McCune, president; F. L. Michaels, Jr., vice president; O. B. Swanson, secretary and treasurer, and Winifred E. Drach, assistant secretary and assistant treasurer. W. E. Wrather, Max W. Ball and Paul McCune were re-elected as members of the advisory committee.

Standard of New York

At present approximately 30,000 employes of Standard Oil Co. of New York are eligible to subscribe for the company's stock under the stock purchase plan, and of this number about 18,000 are participating. The second stock purchase plan has been in operation since February 1, 1929, and is to run for three years, terminating January 31, 1932. Under the first plan, which ran from November 1, 1923, to October 31, 1928, approximately 821,000 shares of Standard Oil of New York stock were delivered to more than 16,000 employes.

Employes of the company and its subsidiaries who have completed one year's service at the time of subscription are permitted to authorize payroll deductions not exceeding 10 per cent of their wages, and for each $1 paid in by employes the company contributes 50 cents. The total amount of contributions by employes and the company is invested in stock of the company at prices fixed quarterly by directors. These prices are fixed at substantially the average market price of the stock during the previous quarter, so that the net cost to the employes is approximately two-thirds of the average market price.

Italo Petroleum

Italo Petroleum Corp. reports for year ended December 31, 1929, profit of $660,793 after all charges except federal taxes. Assets at end of year totaled $17,983,382, against $21,795,980 on December 31, 1928.

Atlantic Refining

Preliminary statement of Atlantic Refining Co. and subsidiary companies for year ended December 31, 1929, shows consolidated net profit of $17,332,000 after interest, depreciation, depletion, federal taxes, etc., equivalent, after deducting $700,000 dividends paid on 7 per cent preferred stock, now retired, to $6.79 a share (par $25) on 2,448,019 average shares of common stock outstanding during the year and $6.20 a share on 2,681,980 common shares outstanding at end of the year. This compares with net profit of $16,848,807 in 1928, equal, after full year's dividend on preferred stock, to $7.72 a share on 2,000,000 common shares.

Missouri-Kansas Pipe Line

Stockholders of Missouri-Kansas Pipe Line Co. have voted to increase the authorized $5 par common stock from

(Continued on Page 156)

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members of New York Curb Market, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended February 11 Sales	High	Low	Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
¼	⅛	1,000	3/16	3/16	3/16	Amer. Con. Oilfields		$11,018,000	$5	.....	.....	2 7/8	.55	1½	.53	72c	⅛
3¼	1½	800	2½	2¼	2½	Amer. Maracaibo	(sh)	700,000	N.P.	.....	.....	7½	2¾	9½	3⅛	8⅝	1⅛
..	..	No sales.				Argo Oil	(sh)	683,971	$10	.....	.....	2¾	1	4½	2¼	5	1½
..	..	No sales.				British-American	(sh)	1,311,321	N.P.	25cQ*	1- 2-30	40	20½	55	32¾	62	7⅞
1	¾	100	⅞	⅞	⅞	Carib. Syndicate		$131,250	25c	.....	.....	28¼	15½	4½	3⅞	4⅞	1
32½	26½	37,600	32½	31¾	32¼	Cities Service	(sh)	24,290,359	N.P.	30cA†	1- 2-30	58¾	40¼	90⅞	54	68½	20
89⅞	88	300	88⅞	88½	88⅞	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	1- 2-30	95⅜	87	103½	94½	98¾	84
⅜	¼	1,300	5/16	5/16	5/16	Colombia Syndicate		$2,000,000	$1	.....	.....	3⅞	1⅛	3¼	.76	2	½
..	..	No sales.				Cons. Royalty		$5,000,000	$10	15cQ	10-25-29	9¾	6⅜	8⅞	6¼	11⅛	2½
6⅝	6	1,200	6¼	6¼	6¼	Creole Petroleum	(sh)	5,977,873	N.P.	.....	.....	14⅞	9½	17½	9½	11¾	5⅝
⅝	¼	100	½	½	½	Crown Central	(sh)	578,000	N.P.	.....	.....	3	.50	3¼	.76	2½	¼
8¾	7¼	1,000	8⅛	7¼	7½	Darby Petroleum	(sh)	1,019,392	N.P.	25cQ	1-15-30	12	4	33½	3¼	26	6½
5⅜	4⅝	400	5	5	5	Derby Oil & Refining	(sh)	500,000	N.P.	.....	.....	2½	74	2¼	1	11	2
..	..	No sales.				Derby Oil & Refining pfd.	(sh)	48,500	N.P.	.....	.....	16¾	4	21⅛	7½	44	20¾
144	133	600	137⅞	135½	136⅞	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	1- 1-30	118	86¼	165	101⅜	209	115
1½	⅞	900	1⅛	1	1	Intercontinental Pet.		$5,682,000	$5	.....	.....	2½	.80	3⅜	1	2⅞	⅜
2½	1⅞	200	2¼	2¼	2¼	Kirby Petroleum	(sh)	750,000	N.P.	.....	.....	2¼	1⅜	3	1¼	3⅝	1¼
1⅝	1⅛	500	1⅝	1⅜	1⅜	Leonard Oil & Dev.		$50,000,000	$25	.....	.....	10⅞	5⅛	9⅜	5⅛	6⅛	1
22	18⅝	200	21	21	21	Lion Oil & Refining	(sh)	250,000	N.P.	50cQ	1-31-30	27½	20	43⅞	20	38⅞	18
..	..	No sales.				Lone Star Gas	(sh)	5,000,000	N.P.	20cQ	12-31-29	59⅜	37	69⅛	48½	67⅞	28
⅝	¼	500	¼	¼	¼	Magdalena Syndicate	(sh)	850,000	$1	.....	.....	2⅞	.80	1⅞	.50	1¼	¼
..	..	No sales.				Margay Oil	(sh)	160,000	N.P.	50cQ	1-10-30	52	12	48½	32	38½	14
..	..	No sales.				Mexico-Ohio Oil		.....	...	.....	.....	12⅛	5	8	2¾	6⅜	2½
⅝	½	300	⅝	½	½	Mountain & Gulf		$4,000,000	$1	2cQ	1-15-30	1½	1	1¾	.76	1½	¼
9⅜	8	1,000	8⅛	8	8	Mountain Producers		$1,682,182	$10	40cQ	1- 2-30	29¼	22¾	28⅞	19½	22⅞	7
..	..	No sales.				New Bradford Oil		$1,095,291	$5	12½cQ	1-15-30	5⅞	4⅝	5⅝	4¼	5	2¼
4¾	3½	800	4¾	3⅞	4¾	New Mex. & Arizona		$1,000,000	$1	.....	.....	16	9¼	11⅞	7⅛	9⅜	2¼
8½	7⅛	100	7½	7½	7½	North Central Texas	(sh)	400,000	N.P.	15cQ	12- 2-29	12¾	9½	14¼	8½	18½	6⅛
1⅞	1	1,600	1¾	1⅜	1⅝	Pandem	(sh)	489,875	N.P.	.....	.....	9⅜	3¼	6	2⅛	3½	½
4	1⅞	600	3⅝	3¼	3¼	Pantapec Oil	(sh)	1,506,600	N.P.	.....	.....	12⅛	7	15⅝	8½	10¼	1⅞
..	..	No sales.				Pennok Oil	(sh)	150,000	N.P.	.. ...	.....	13½	5⅛	7¾	4⅞	7¾	4⅜
..	..	No sales.				Red Bank Oil	(sh)	250,000	N.P.	.....	.....	24⅜	7	18	4⅞	16	9⅝
3	2⅜	500	2¾	2⅝	2⅝	Reiter-Foster	(sh)	388,584	N.P.	10cQ	12- 2-29	15½	3½	12⅞	4⅛	8½	1⅛
..	..	No sales.				Ryan Consolidated	(sh)	500,000	N.P.	.....	.....	7	4½	12	4⅛	11	3
2⅜	2	100	2	2	2	Salt Creek Consolidated	(sh)	1,286,300	$10	10cQ	1- 2-30	8	5¼	7¼	5½	5⅞	1⅞
12⅜	10½	100	10⅝	10⅝	10⅝	Salt Creek Producers	(sh)	1,496,859	$10	50cQ	2- 1-30	35½	27¼	35	23⅛	25⅞	9
..	..	No sales.				Savoy Oil		$750,000	$5	.....	.....	7	1¼	3½	1	2½	⅛
19½	17½	200	18⅛	18	18⅛	Transcontinental pfd.		.....	...	.....	.....	..	..	..	..	..	..
4¼	3¼	200	3	3	3	Venezuelan Petroleum	(sh)	755,090	$5	5cQ	11-15-29	7⅜	4¼	9⅛	4¾	6½	1¾
..	..	No sales.				Woodley Petroleum		$500,000	$1	.....	.....	7	4¾	8¼	4⅞	9½	2
..	..	No sales.				"Y" Oil & Gas (new)	(sh)	100,000	N.P.	.....	.....	6	1¾	8⅜	2⅛	2⅞	¼

*Including one-half per cent monthly in stock. x Ex-dividend. †Payable monthly and a monthly stock dividend of one-half per cent. ‡Cents per share.

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members of New York Curb Market, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended February 11 Sales	High	Low	Close	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
17½	15½	600	16	15½	15½	Anglo-American Oil (nv)	£4,192,635	£1	.36⅞	11-27-29	21⅝	17⅞	22⅜	14⅞	17	11
..	..	No sales.				Borne Scrymser	$1,000,000	$25	$1S.A.	10-15-29	69	50	56½	44½	46½	25
..	..	No sales.				Buckeye Pipe Line	$10,000,000	$50	$1Q	12-14-29	60	45	76	53	74¼	55
..	..	No sales.				Chesebrough Mfg.	$3,000,000	$25	$1Q*	12-30-29	126	76½	161	117	210	130
..	..	No sales.				Continental Oil	$36,057,840	$10	.....	12-15-27	22⅝	16¼	23	16	29	10
..	..	No sales.				Cumberland Pipe Line	$1,500,000	$50	$1Q	12-15-29	137	89	114	67	75¾	40
..	..	No sales.				Eureka Pipe Line	$5,000,000	$100	$1Q	11- 1-29	68½	47	88	64⅛	70½	42
..	..	No sales.				Galena Signal Oil	$16,000,000	$100	.....	.....	13½	3½	13	4¼	6½	3
87½	78	1,100	86⅞	85⅛	85¼	Humble Oil & Refining	$74,103,300	$25	50cQ	1- 1-30	68½	54	114¾	59¼	128	74⅛
310	305	600	309¾	308	309¾	Illinois Pipe Line	$20,000,000	$100	$10S.A.	12-16-29	182	123¾	290½	176½	340½	260
27⅜	24⅝	1,200	25⅛	24⅝	25⅛	Imperial Oil Co., Ltd.	(sh) 26,421,768	N.P.	12½cQ	12- 2-29	64¾	37¾	104	56¾	41	22
41	38⅝	200	40	40	40	Indiana Pipe Line	$3,000,000	$10	50cQ‡	2-15-30	94½	61	91⅞	74⅜	41⅞	26
21⅞	19⅝	200	19⅝	19⅝	19⅝	International Pet.	(sh) 14,247,088	N.P.	12½cQ	12-16-29	29	28¼	55	35	30⅜	15
..	..	No sales.				National Transit	$6,362,500	$12.50	25cQ‡	12-16-29	24	13½	32⅜	19⅜	25½	10½
..	..	No sales.				New York Transit	$1,000,000	$10	40cQ§	1-15-30	44½	31¼	75	38½	17½	10
54	50	100	50	50	50	Northern Pipe Line	$2,000,000	$50	$2S.A.	1- 2-30	100	70	69	56½	63	41
71¼	68¼	800	69½	68¼	68¼	Ohio Oil	$60,000,000	$25	50cQ‡	12-14-29	67⅞	52	84	58½	79⅞	64⅛
22½	20	200	22	22	22	Penn Mex. Fuel	$10,000,000	$25	50cQ	12-14-29	39	12	84	28	44½	20
..	..	No sales.				Solar Refining	$4,000,000	$25	$1.25S.A.	12-20-29	..	..	..	..	50	29
16¾	13	200	16	16	16	Southern Pipe Line	$1,000,000	$10	50cQ	.....	27¼	15½	19	15	22½	13
41⅛	37½	500	38⅜	37½	37⅝	South Penn Oil (new)	$30,000,000	$25	50cQ	12-30-29	41½	35	71⅞	36¾	60¼	35⅛
..	..	No sales.				Southwest Pa. Pipe Lines	$1,750,000	$50	$1Q	10- 1-29	83	55½	102	70	70	60
54⅝	52	6,000	52½	52⅛	52¼	Standard Oil of Indiana	$348,175,069	$25	62½cQ‡	12-16-29	81½	64⅝	95⅞	70⅞	63	45
30	28	100	29⅛	29⅛	29⅛	Standard Oil of Kansas	$8,000,000	$25	50cQ	12-16-29	20⅞	14⅝	37¾	15	33¾	18
36⅝	33¼	1,800	36½	35⅞	36½	Standard Oil of Kentucky	$25,654,516	$10	40cQ	12-16-29	130	111½	179¾	122¼	46⅞	29
..	..	No sales.				Standard Oil of Nebraska	$4,649,225	$25	62½cQ‡	12-20-29	49½	40	54⅞	39⅞	50¼	40
..	..	No sales.				Standard Oil of Ohio	$14,000,000	$25	62½cQ	1- 2-30	87½	72	134	71	129	60
10	10	100	10	10	10	Swan-Finch Co.	$861,466	$25	.....	12- 2-29	21	14½	23½	16	18	10
96⅞	93¼	200	95	93⅞	93⅞	Vacuum Oil Co.	$126,180,350	$25	$1Q	12-20-29	..	..	111	72	133¾	75

Note—High and low on all stocks selling this week are for 1930.
*Plus 50 cents extra. ‡Plus 25 cens extra. §Plus 10 cents extra. x Ex-dividend.

WEST TEXAS FIELDS

(Continued from Page 73)

Smith, located in Section 24, Block 194, had an initial production of 125 bbls. daily at 1,620-1,818 feet. Freeman & Miller's No. 1 Pecos Valley, located Section 36, Block 3, H.&T.C.R.R. Survey, was dry and abandoned at 1,724 feet. Southern Crude Oil Production Co.'s No. 1-A Tippett, located in Section 539, Arnold & Barrett Survey, had an initial production of 160 bbls. in 24 hours at 331-450 feet. Taylor-Link's No. 13 University had an initial production of 50 bbls. in 14 hours at 1,680-1,725 feet. Phillips Petroleum Corp.'s No. 1 Byrne, located Section 77, Block OW, was dry and abandoned at 1,575 feet.

Upton County

Snowden & McSweeney's No. 3 Hughes, located 330 feet from south and west of 80-acre lease in Section 4, William Teer Survey, had an initial production of 25 bbls. at 2,378-2,386 feet.

Ward County

Mid-Continent Oil & Gas Co.'s No. 1 Coates, located 2,316 feet east and 922 feet south of NW cor. Section 23, Block 29, was dry and abandoned at a total depth of 3,415 feet.

Winkler County

Shell Oil Corp.'s No. 1 Grisham-Hunter-A was drilled to a total depth of 2,828 feet, topped the pay at 2,760 feet and had an initial production of 402 bbls. pipe line oil pinched.

PIPE LINE RUNS
January 29 to February 5, 1930
Runs Through Trunk Lines

	Last period
Atlantic P. L. Co., Port Arthur	27,000
Gulf P. L. Co. to coast, via Ranger	32,337
Humble P. L. Co., Comyn, Tex.	36,302
Humble P. L. Co., Ingleside	36,722
Illinois P. L. Co., Del Rio, Tex.	41,714
Magnolia P. L. Co., De Leon, Tex.	19,500
Pasotex P. L. Co., El Paso, Tex.	8,862
Shell P. L. Co. to Healdton, Okla.	37,739
Shell P. L. Co. to Houston Tex.	29,672
The Texas Company, Houston, Tex.	23,215
Total	284,063

Tank Car Shipment

Big Spring P. L. Co., Big Spring	300
Landreth Prod. Corp., Crossett	197
Reagan County Pur. Co., McCamey	....
Thomas & Brann, Grant City	100
Orient Co., McCamey	75
American Pet. Co., Pyote	....
Southern Crude O. P. Co., Wickett	13,618
Total	14,290

Runs to West Texas Refineries

Bluebonnett Ref. Co., Wickett	3,007
Burford Ref. Co., Pecos	4,426
Col.-Tex. Ref. Co., Colorado	7,000
Cosden Ref. Co., Big Spring	8,056
Great Western Ref. Co., Big Spring	3,724
Humble Oil & Ref. Co., McCamey	8,118
Mid-Tex Ref. Co., Midland	....
Tonkawa Ref. Co., Pyote	2,000
Big Spring Ref. Co., Big Spring	1,736
Richardson Ref. Co., Big Spring	3,976
Wickett Ref. Co., Pyote, Tex.	150
Total	42,193

Summary

	Last period	This period
Pipe line runs through trunk lines	276,168	284,063
Tank car shipments	13,604	14,290
Runs to West Texas Refineries	41,284	42,193
Total daily distribution	331,056	340,546
Total daily production	340,530	336,121
Daily average from storage	9,474	4,425

PANHANDLE FIELDS

(Continued from Page 74)

others' No. 1 Parkey was dry and abandoned at 1,504 feet.

Cooke County

Humble Oil & Refining Co.'s No. 1 Sears was dry and abandoned at 2,000 feet. Kewanee Oil & Gas Co.'s No. 1 Milburn was dry and abandoned at 1,602 feet.

Baylor County

Consolidated Oil Co.'s No. 9 Portwood was dry and abandoned at 1,456½ feet. Its No. 10 Portwood swabbed 175 bbls. daily at 1,391-1,407 feet. The well was put on the pump. Perkins & Cullum's No. 1 Howe was dry and abandoned at 1,522 feet.

Foard County

Shell Petroleum Corp.'s No. 1 Tarver-B pumped 79 bbls. oil and 2 bbls. water in 24 hours at 2,009-43 feet.

Jack County

Wylie and others' No. 1 Shipley was dry and abandoned at 1,527 feet. L. C. Harper's No. 6 Box had an initial production of 247 bbls. at 3,137-51 feet. Petroleum Producers and others' No. 1 Raley had an initial production of 120 bbls. oil and 3 bbls. water at 3,148-66 feet. Shaw Oil Co.'s No. 5 Box had an initial production of 100 bbls. at 3,100-39 feet.

Montague County

Seitz and others' No. 1 Lewis was dry and abandoned at 2,500 feet.

Wichita County

Kisk Oil Co.'s No. 1 Waggoner had an initial production of 15 bbls. at 878-85 feet.

Young County

Madden & Hunt's No. 2 Deitrich had an initial production of 193 bbls. at 1,-163-43 feet. Perkins & Cullum's No. 6 Deitrich was dry and abandoned at 1,-200 feet. Petroleum Producers Co. and Madden's No. 2 Deitrich had an initial production of 182 bbls. at 1,116-41 feet. Sun Oil Co.'s No. 14 Deitrich had an initial production of 40 bbls. at 1,158-60 feet. Wooten & Reed's No. 1 Casey was dry and abandoned at 603 feet. Their No. 5 Casey was dry and abandoned at a total depth of 640 feet.

Wilbarger County

Davis Oil Corp.'s No. 8 Sigler Waggoner had an initial production of 350 bbls. at 2,643-75 feet. Grayback Development Co.'s No. 1 Bud Waggoner had an initial production of 125 bbls. at 2,-647-76 feet. Lion Oil Refining Co.'s No. 1 Waggoner was dry and abandoned at 2,501 feet. The Texas Company's No. 372 Waggoner had an initial production of 16 bbls. at 2,272-86 feet. Waggoner Refining Co.'s No. 4 Waggoner had an initial production of 15 bbls. at 1,185-95 feet and was drilled to a total depth of 1,199 feet. Waggoner Refining Co.'s No. 5 Waggoner had an initial production of 150 bbls. at 2,664-71 feet.

TEXAS PANHANDLE COMPLETIONS

Week Ending February 15

Carson County

Red River Gas Co.'s No. 3 Lee Bivins, located in the C SE SE, Section 43, Block M-20, G.&M.R.R. Survey, made 36,000,000 feet of gas at 2,205-2,520 feet.

Gray County

George Ray and others' No. 1 Noble, located 240 feet south and 330 feet west of west line, 80-acre tract, Section 16, Block A-46, H.&G.N.R.R. Survey, had an initial production of 10 bbls. the first 24 hours after having been shot with 60 quarts at 2,895-2,912 feet. Danciger Oil & Refining Co.'s No. 2 R. E. Smith swabbed 160 bbls. at 3,198-3,220 feet. McCollum and others' No. 1 Meers had an initial production of 8,000,000 feet of gas at 3,217-3,324 feet. Quenn Oil Co.'s No. 1 Lovett, located 330 feet north and west of W half NE, Section 35, Block B-2, H.&G.N.R.R. Survey, had a show of gas at 2,710 feet and was dry and abandoned at 3,200 feet.

Wheeler County

Murchison & Fain's No. 1-A Cooper, located 380 feet west and 330 feet south of NW cor., Section 80, Block 23, H.&G. N.R.R. Survey, was junked and abandoned at 1,455 feet.

UNIT OPERATION IN CALIFORNIA FIELDS

(Continued from Page 39)

a new corporation, one-fourth of which was owned by the Associated; Richfield, Standard and The Texas Companies. A dry hole was drilled in 1928 and 1929. Lease obligations were so taken that a slow development would prove the territory in zones. There was no consolidation of property interests.

At Carpenteria, Santa Barbara County, nine companies, headed by the Continental Oil Co., have arranged a controlled prospecting and development program for nine state prospecting permits along the shore of the Pacific Ocean. Property rights have not been transferred, but a fund is set up out of production to be divided among the nine companies.

Rimpau, Orange County: The Union Oil Co. and the General Petroleum Corp. have each contributed one section of land and entered into a joint agreement as to the development of the 1,280 acres, each paying half of the cost of drilling a wildcat well, now being drilled.

Huasna, San Luis Obispo County: In this district the Union and The Texas Company pooled their leases 50-50 and drilled a wildcat well, each company contributing half of the cost.

Oxnard Plain, Ventura County: In this area the Standard and the Shell companies have leased large blocks of land and have entered into a joint prospecting arrangement. It is understood that if oil is developed, leases will be pooled and the territory developed as if it were held by a single owner.

Of the foregoing wildcat tests, the one at Carpenteria appears to be the nearest approach to unit operation. It, however, is not a true unit program.

The purpose of unit operation has likewise been sought in proven areas. At Kern Front in 1929 Brundred Brothers proposed unit operation of the properties of the 12 companies in this field. They claimed as the advantages of the proposed unit operation reduced operating costs, the need of fewer new wells and added oil recovery due to a proposed repressuring program. The project was considered by the 12 companies, but was never adopted. Some companies were unwilling to give up control of their lands or to take stock in a corporation for oil lands owned in fee.

At Santa Fe Springs

At Santa Fe Springs in 1928, repressuring of the Meyer zone as a unit was proposed as a means of avoiding the waste of gas that would follow the development of these deeper zones. The plan was accepted by all but four or five of the operators in the field, and 85 per cent of the Meyer zone production was actually represented. An agreement was partly signed up. The matter did not go far enough to determine the reaction of the landowners to such an agreement. So many interests were involved that there promised to be great difficulty in making such an arrangement without having some means of compelling the minority to join with the majority in reasonable conservation.

At Santa Fe Springs in 1930, the engineers of the Union Oil Co. proposed a unit operation and control of the Clarke zone. The same difficulties that prevented repressuring the Meyer zone will exist relative the unitization of the Clarke zone, even should the gas law be enforced. The need of some action relative both of these zones is still a very important one, since the Clarke zone will produce a surplus of gas that can best be stored in the Meyer zone.

At Kettleman Hills in 1929 three agreements for a controlled development program were entered into relative the North, Middle and South Domes. No discoveries have as yet been made on the Middle or South Domes and prospecting work on them has nearly ended.

Kettleman Hills Situation

At the present time the Kettleman Hills committee is seriously considering two programs relative to the North Dome. The one is for unit operation and the other is for controlled development. Where less than a year ago it seemed impossible for the Secretary of the Interior to harmonize views so as to secure the three agreements of 1929, it is now recognized that either unit or near unit operation is a necessity. No matter what the final solution of this problem may be, it will be a big step forward in accomplishing the purposes of unit operation. An extensive drilling program will be avoided, revenues will be equalized, gas waste will be stopped and eliminated and there will be no complete demoralization of the oil industry, due to this great field which covers 16½ square miles. Each barrel of oil produced is equivalent to 1.4 bbls. of gasoline. The oil is 59 to 61 degrees gravity and contains 90 per cent gasoline. With each barrel of oil there is produced 25,000 feet of gas, containing .7 gallon of gasoline, amounting to a half barrel of natural gasoline with each barrel of oil produced. Uncontrolled, this field could supply the entire State with gas and gasoline and leave a surplus sufficiently great to demoralize prices. If some of the companies should hold out and refuse to enter unit operation, the situation is critical enough to make certain that some co-operative plan will be developed. This may be hastened by the enforcement of the gas law.

Conservation of gas is even more difficult to accomplish than conservation of oil. In the past two and one-half years the overproduction of oil has brought about an enormous waste of gas. In a state where there is no good grade of coal, the importance of conserving gas is vital to its industries. Committees of operators and engineers, representing the entire industry, worked through the latter part of 1927 and 1928 in an effort to bring about voluntary co-operation to conserve gas. In this matter it finally developed, however, that co-operation was impossible without 100 per cent participation. Participation to this degree was never attainable. The will of the majority was always thwarted by the unwillingness of a very small minority. This situation gave rise to the new gas law of the State of California. If sustained by the courts, it furnishes the means of making all parties adhere to the need of the community that gas shall be conserved.

Gas Conservation Law

Under the new law, the blowing of gas to the air is prima facie evidence of waste. The law also contemplates a division of gas outlets and co-operative agreements for the conservation of gas. One paragraph in it is directed to excessive gas-oil ratios in fields where oil can still be produced with a low gas-oil ratio. The State has applied for injunctions to stop the waste of gas at Santa Fe Springs, Signal Hill and Kettleman Hills. These proceedings are still in the courts.

Another paragraph of the law permitted a different type of action. By working along this line, the director of natural resources secured an order in the Ventura Avenue Field calling for the reduction of gas production there to the available outlets, plus a 10 per cent working surplus.

An average daily curtailment of 112,-450,000 cubic feet of gas has prevailed since December 1. The gas production of the field was cut 40 per cent, and 82 per cent of the former blowoff was eliminated. While gas production was cut 40 per cent, oil production was cut only 22½ per cent. Most of the gas conservation at Ventura was accomplished by the outright killing of wells having excessive gas-oil ratios. Of the 217 wells in the field, 137 are now producing and 80 have been killed. The gas-oil ratio of the field showed a notable reduction.

A successful application and working out of the California gas law should furnish sufficient justification for the adoption by Oklahoma and Texas of a similar practice. Unquestionably, the easiest manner in which to comply with the gas law is by means of complete unit operation. While unit operation is still rather revolutionary for various reasons, the gas law promises a new form of regulation that will make necessary near unit operation and which will encourage unit operation. This sort of procedure can be applied to the existing fields where gas is still an important factor.

In New Areas

In new areas where the prospecting has not begun, a form of control might be established. R. E. Allen, engineer with Paul Grimm, oil umpire for Santa Fe Springs, has suggested that, in order to bring about a complete co-operation of all landowners, an exclusive franchise system could be set up covering each area to be tested, and that no franchise to prospect would be issued or granted until a uniform plan of development had been adopted. This would require legislative action and represents a step in advance of what the industry is probably prepared to accept. If voluntary action can be secured among the operators, it will go far to bring about a condition where the co-operation of all landowners may be sought. Experience has shown,

however, that thus far in southern California a 100 per cent co-operation of many landowners can not be secured.

In most districts, the situation is not complicated, as it is in southern California. Real estate values in many instances far exceed any possible oil value that may be set up. The limitation due to real estate values is becoming so pronounced and definite in the Los Angeles Basin that, in some areas, the oil man is no longer a welcome visitor. This serves only to indicate that, while unit operation may not be effective in this area of high real estate values, a different sort of check will prevent a series of town lot fields, similar to those that have been developed in the past 10 years. Then again it must be admitted that the Los Angeles Basin has been so thoroughly prospected that but few possible areas still remain.

Behind all of these developments and trends in the oil industry and all of the things that have been discussed herein is the engineer's conception of what an oil deposit really is. This view is indeed much different from the one so often expressed in court decisions that oil is a fugitive substance and belongs only to the one who captures it. We may look forward, however, to the time when this old view will give way to the one upon which the engineers in the industry base their support of the purpose of unit operation.

WINTER MOTOR OIL PRESENTS PROBLEMS

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lustrate these points let us consider two oils, A and B, having the following physical characteristics:

	A	B
Gravity (A.P.I.)	22.0	24.3
Flash, ° F.	410	400
Fire, ° F.	490.0	470
Viscosity at 100° F. (Saybolt)	788	835
Viscosity at 210° F (Saybolt)	[illegible]	77
Pour, °F.	0	30

Typical Motoring Torque Data

Typical motoring torque data at three temperatures, minus 10° F., 0° F., and 10° F. are shown by curves for a Willys-Knight model 66A passenger car engine. Even for temperatures as low as minus 20° F. the breakaway torque for either of these oils was less than 180 pounds per foot, a very low figure when compared with the torque required to obtain 10 to 20 R.P.M. at 0° F. Possibly breakaway torque is at times unduly stressed because motoring torque increases so rapidly at low speeds (of curve for oil A at minus 10° F.). Starting will be accomplished more readily at temperatures of 10° F. or lower with oil B than with oil A although the former has both a higher pour and a higher viscosity rating. Similar results were secured for these same oils when tested in a Mack AL bus motor as shown by the following comparative torque data (lb.-ft.) obtained at 10° F.:

Speed	13 R.P.M.		25 R.P.M.	
Oil	A	B	A	B
Mack	375	245	480	295
Willys-Knight	272	208	320	266

In making the experiments with the Willys-Knight engine at 10° F. the pressure gauge readings showed that the oil pump began to build up pressure at 6 and 8 R. P. M. respectively for oils A and B and that these pressures reached 56 and 40 pounds respectively at 150 R. P.M. It does not follow that oil was being delivered to the bearings. Supplementary tests made with a Cadillac pump under a 5-inch head of oil showed that it would deliver oil A in sufficient quantity to a simulated connecting rod bearing at 10° F. and a pressure of 71 pounds. No appreciable amount was delivered at 0 or 5° F. although the pressure built up was the same. With oil B the same setup showed satisfactory delivery at 15° F. and 48 pounds pressure but no delivery at 10° F. and 44 pounds pressure. These data show that for oil A delivery ceased above the pourpoint, that for oil B sufficient quantities were supplied at 15° F. below the pourpoint, and that pressure is not an index of oil flow.

Fluidity at low temperatures is also a main factor in transmission and differential lubrication. A satisfactory gear oil must permit shifting of gears readily at the lowest temperature apt to be encountered, must follow the gears and not channel, and its resistance must be low enough to permit the cold engine to rotate the gears. The method of determining these characteristics is fairly obvious. A transmission unit is mounted in the small controlled temperature room, one dynamometer being coupled to the driving end, the other through a cradled speed booster to the driven end. The transmission case is charged with the oil to be tested and warmed up to a prescribed operating temperature. The shift lever is placed in either low or second gear, after which the room and transmission are cooled to one of the test temperatures. The pull to shift the lever to neutral and the duration of its application are observed.

With the transmission in one of the intermediate gears the resistance to rotation is determined by measuring both input and output. Tendency to channel is noted by visual observation. Following such tests at several temperatures the efficiency of the oil as a lubricant at operating temperatures may be determined by measuring input and output under variable conditions of load, speed and temperature. An idea of the amount of wear can be obtained by analyzing the oil drainings for iron. Checks are made by testing the oil in the transmissions and differentials of various cars in the bus room.

Turning now to fuel problems, the characteristics of a winter grade gasoline must be such that any car in any condition will start readily in the coldest weather. From what has been said about motor oils it will be appreciated that gasolines should fire at the lowest possible starting speeds and be such that explosions result in enough power to maintain operation. A fuel may fire readily at the second or third turn of the motor but generate only enough power to disengage the starter without carrying the engine over the next compression. This causes a number of false starts. A second fuel in the same engine and carburetor might not fire so readily but might maintain operation after explosion occurs. A dynamometer with its high inertia would fail to differentiate between the two conditions, while the customer would note the difference only too quickly. For this reason cold starting experiments with the engine's own starting equipment are preferred.

On Starting the Tests

The engine on starting tests is filled with a fresh charge of crankcase oil, warmed up on the fuel to be tested and stopped in the usual manner by cutting the ignition. After cooling to the test temperature ease of starting is determined under prescribed conditions of throttle, choke, spark, piston position, and a fully charged battery. Measurements made are the time required, the total revolutions, and the revolutions per minute at the time of firing. Other pertinent data are the ease with which operation is then maintained and the time required to obtain normal operation as indicated by ability to idle or accelerate without the use of the choke. Dilution troubles will obviously be minimum for that gasoline which results in the quickest start and which requires the least use of the choke after starting. A point to be kept in mind when interpreting results is that the composition of the gasoline in a vacuum tank or the carburetor bowl is not the same as that of the gasoline in the main tank. In some recent starting experiments it was found that the gasoline in passing through the vacuum tank may lose light ends to the extent of 2 per cent on the total gasoline.

Knock rating is important at all times. Suffice it to say here that the rating for a given gasoline must be maintained at a figure which will prevent it from knocking in the class of engines it is intended to serve. Neither is it necessary to consider power delivery and fuel economy under normal conditions of operation except as affected by completeness of combustion, largely a matter of carburetion and distribution. Before placing any car on test, or for that matter in service, it is essential to secure correct carburetor adjustment. This is accomplished best by operating the car on the chassis rolls and judging carburetor setting by observing the CO and CO_2 analyses under all conditions of load and speed.

Important to Manufacturer and Refiner

Both the engine manufacturer and the petroleum refiner would be spared much grief were this point more thoroughly appreciated. Road performance tests made with a car having a fixed jet carburetor resulted in 15.9 miles per gallon of gasoline. When placed on the chassis rolls the CO-CO_2 recorder showed 9 per cent of each gas for practically all loads and speeds. After correcting the condition, which necessitated a new carburetor of the same model, the recorder showed 12 to 13 per cent CO_2 and 3.5 to 2 per cent CO. Repetition of the road performance tests then gave 22.3 miles per gallon of gasoline. Consequently all cars are now placed on the chassis rolls to insure correct carburetion before any road performance tests are begun. Permissible air fuel ratio is so large that there was nothing in the performance of the car, as received, to indicate the richness of the mixture.

No gasoline tests under summer conditions would be complete without determining tendency to gas lock. While the remedy for this trouble is primarily a factor of design, cars already on the road must be supplied with fuel that will lessen their gas lock tendencies. To do this it is necessary to know the temperatures prevailing at various points in the gasoline supply systems of a number of cars. The difficulty of the problem is illustrated by the wide range of 119° F. to 175° F. found for carburetor bowl temperatures of cars already tested, yet in neither extreme was gas lock encountered. In the latter case the troublesome light ends had been removed by distillation from the vacuum tank which was located so that it was always as hot as the carburetor bowl.

Cause of Gas Lock

Gas lock occurs when the temperature of the gasoline in the carburetor bowl exceeds its liquid initial boiling point, rather than that of the gasoline in the main tank, by 4° to 6° F. The easiest solution of the problem is to design the feed system so that the gasoline gets to the jets as cool as possible and so that the liquid initial boiling temperature of the fuel in the bowl never is reached.

Maximum carburetor bowl temperature can be determined by continuous operation at a high speed road load in the hot room. A better test for gas lock is a cycle of operations consisting of accelerating from an idling motor to 45 miles per hour under a road load in 1 minute, maintaining this operation for 4 minutes, then idling 3 minutes, and repeating until all gasoline temperatures attain the same maxima on each cycle.

The final judgment on any product, however, is not made by the laboratory but by the man who uses it. To anticipate his reaction laboratory results must be correlated with road tests to determine the correct laboratory procedure. Once this correlation is effected more accurate and reliable data can be secured in the laboratory. Then there is the additional advantage that laboratory methods permit summer tests to be made in winter and winter tests at any time of the year.

GAS CONSERVATION IS NEEDED IN CALIFORNIA

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possible under competitive development and operation of the old-fashioned type.

A happy sign of the times is the present activity of an engineering committee representing the operating companies at the Kettleman Hills. That committee, including several members of this Institute, after study of unit plans adopted or proposed elsewhere, has presented two plans—one providing for centralized control and unit management of the entire field, the other contingent upon full co-operation of the operators in allotting development and "holding production down to the minimum consistent with good practice."

Kettleman Hills

The fact that the Kettleman Hills owners and operators face an injunction proceeding under the California gas law makes opportune this conservation movement, which was specifically provided for in the field agreement of last July. As has been suggested by Secretary Wilbur to the chairman of this committee: "If a properly worked out plan can be made a part of the court action instead of having something arbitrarily put on, it will mean a great deal."

This idea of self-regulation by voluntary co-operative action within the industry has been stressed from the beginning by the Federal Oil Conservation Board. The determination of equities among the owners and operators can best be made by themselves if only the "intense individualists" can be made to see clearly that unrestrained individual action threatens their own profits. Insolvency is a high price to pay for perfect freedom of action.

Moreover, the other phase of the question, the assurance that the public interest would benefit by unit control, has been fully discussed in the reports of the Federal Board. Even in an oil field potentially as large as the Kettleman Hills the possibility of monopolistic effects of widespread extent need not be feared, but any imagined undue and harmful influence upon supply or price could and should be avoided, as was suggested to the Board by Mr. Hughes as counsel of the American Petroleum Institute, by bringing the voluntary co-operation "always under appropriate and adequate governmental scrutiny." The California law not only sanctions co-operation of producers, where nature has made the oil pool a unit, but in enjoining waste of gas this new law practically imposes some type of unit control. There need be no fear that observance of natural and economic law is necessarily in violation of statutory law.

REFUGIO CRUDE BIG COMPETITIVE FACTOR

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production is expected to make Refugio a factor in the light end refined products. That new oil is considerably higher gravity than the 3,700-foot gas oil crude and is a highly desirable refinery charging stock. An analysis of the crude from the discovery well presents the following picture:

Gravity	29.5°
Flash	115
Viscosity at 100	40
Pour	0
Sediment	.4%
Water	.35%
Tar	.8%
Sulphur	.16%
Color	Dark green

YIELDS*

Gasoline	28.68%	400 endpoint
Gas oil	65.65%	25.3 gravity
Fuel	4.00%	
Loss	1.67%	

*Straight distillation.

Most of the latter crude which is owned by subsidiaries of the United Gas Co., is being shipped by tank car to the plant of the Motor Fuel Products Co., a subsidiary, at Laredo, Tex., to replace Mirando crude which the plant has been running.

Although Refugio is being developed wide open because of numerous small ownerships, it is producing under a self enforced curtailment of output. The high gas pressures encountered in the field force choking in all wells on completion to the absolute minimum. Were it not for this factor, it is not doubted but what the daily production would be considerably above the present 40,000-bbl. figure. This choking in may explain to some extent the long lives of the wells. Although the individual wells are not large, rarely being over 200 to 500 bbls. daily, the production is steady from the start and what might be called settled flow. Few wells have quit or sanded up since the field was opened, and although the field is over

a year and a half old, no well has had to be put on the pump.

Recovery to date

A total of 91 wells had been completed up to February 1 and these had a total recovery of 2,795,178 bbls. to that date. The completions were distributed by companies as follows:

	No. wells	Total prod.
Benedum & Trees	4	210,829
Dr. H. E. Hewitt	2	16,438
United Gas Co.:		
Houston Gulf Gas Co.	12	267,298
Union Producing Co.	11	319,150
Houston Oil Co.*	15	432,655
Independent Oil & Gas Co.	10	151,224
Morgan Oil Corp.	10	357,906
Pearson Properties	7	221,697
Refugio Oil Corp.	2	196,961
Saxet Oil Co.	12	436,277
Sun Oil Co.	5	184,246
The Texas Company	1	497

*Includes one well drilled by Rutherford-Traylor Oil Co.

The Refugio Field has presented a rather peculiar situation. It is situated in the central portion of Refugio County on and around the townsite of the town bearing the same name and is about 15 miles north of the bays and about 30 miles from the Gulf of Mexico property. The field is some distance down the Coast to the southwest out of what is generally accepted as the Gulf Coast Salt Dome area and although the field may overlie a deeply seated salt dome it generally is conceded that it is not a salt dome field but rather large Miocene high.

Production of the 3,700-foot horizon is believed to be from the lowermost Miocene age. The age of the formations in the deep wells has not been determined. In contrast with the Gulf Coast Salt Dome fields, the Oligocene, from which the bulk of dome production is obtained, is barren at Refugio. The formations at Refugio are of a nonmarine character, also in contrast to Coastal dome fields.

Surrounds Gas Area

Oil production at Refugio surrounds a well defined dry gas producing area, which is on top of the "high." On top of the high, which is several miles in extent no production has been found. On the edges surrounding this high part gas wells spraying some oil are obtained and away from this edge a circle of good wells has been completed. A few scattered deep tests below the 3,500-3,700-foot horizons have been drilled within that area without encountering anything of importance and on the extreme north, west and southwest scattered deep holes have been put down, one to 6,100 feet, which have fairly well defined the trend in those directions although as deeper drilling progresses it may be possible to wildcat a little further down on those sides.

The history of Refugio is rather interesting. As early as 1919, gas seeps along Mission River, which flows through the heart of the present field, attracted the attention of some wildcatters, which was followed a year later by the drilling of the first wildcat by the Texas Gulf Oil and Gas Association. The location was on the north side of the river on the F. V. W. Heard tract, about 2 miles northwest of Refugio. This well blew out from a sand around 1,900 feet, and finally was completed as a small gasser.

Within the past five years as many as seven tests were drilled in various parts of the area, most of which encountered high pressure gas sands and were abandoned after serious blowouts. Finding of gas was of little concern at that time as oil was the objective but in 1924 O. R. Seagraves, now president of the United Gas Co., but who at that time was interested in supplying natural gas to Corpus Christi and other near-by towns from the White Point Field, became interested in the gas possibilities at Refugio. He was instrumental in organizing the Houston Gulf Gas Co., now a subsidiary of the United Gas Co., which company now is the principal operator in the field, and after purchase of numerous gas rights and acreage, proceeded to lay a trunk line to Houston to utilize the gas reserves. The line was completed in May, 1926. In the meantime, Houston Pipe Line Co., a Buckner interest, and associated with the Houston Oil Co., a present large operator at Refugio, laid a line from the field to connect with its Mount Lucas (Live Oak County)-Edna-Big Hill line. That line since has been extended from Edna on into Houston, and this furnished the first gas line outlet from the field, being completed to Houston in September, 1925.

Oil Discovery

With the development of this enormous gas reserve, the idea of Refugio being anything but a gas field was abandoned until the Texas Gas Co. in the summer of 1928 took over a 2,400-foot test abandoned by the Houston Oil Co. on the south side of the gas-producing area and deepened it to a sand at 3,682-3,702 feet, where on July 28 it came in as the discovery oil well flowing an estimated 700 bbls. daily of 26.5 gravity oil. This well, which later was sold to the Benedum & Trees interests, eventually proved to be an edge well and partly because of the little knowledge of operators at that time of the peculiar sand conditions, the well went to water.

Following this well, wildcatting for oil was resumed in earnest with the result that oil has been found on all sides of the original gas-producing area and the field has developed to one of the largest potential sources of crude in the country.

In the earlier days of development operators experienced considerable difficulty with the high pressure gas sands and with the salt water problems but operators since then have learned what to expect and are experiencing very little trouble at this time. The chief solution in connection with the salt water has been the determining of just where to cement the casing because of the close association of the water, oil and gas in comparatively thin sands. By extra heavy equipment, Spanish type derricks permitting installation of extra heavy master gates and blowout preventers the gas problem has been fairly well controlled although some extremely serious blowouts have occurred.

The great number of high pressure sands has been a source of trouble although they indicate a great potential gas reserve. Some geologists have claimed as high as 26 distinct gas-producing horizons although the majority can be grouped into two series, the 1,600 to 3,700-foot sands, and those below 4,200 feet. At present the chief gas is being obtained around 3,500-3,600 feet. However, gas is not the primary motive for drilling at this time as the reserve already obtained is far more than ample to meet all present requirements.

OIL SHARES DEVELOP FURTHER WEAKNESS

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700,000 to 5,000,000 shares and to create 5,000,000 shares of $1 par class "B" stock. The board of directors, according to Frank P. Parish, president, had previously approved the plan. The capitalization of Missouri-Kansas had consisted of 10,000 shares of $100 par 7 per cent preferred stock, none of which was outstanding, and 700,000 shares of common stock of which 416,199 shares were outstanding.

Indiana Pipe Line

Report of Indiana Pipe Line Co. for year ended December 31, 1929, shows net income of $837,489 after taxes and depreciation, equivalent to $2.79 a share (par $10) on 300,000 shares of stock. This compares with $849,112 or $8.49 a share (par $50) on 100,000 shares in 1928.

RECENT DEVELOPMENTS IN FLOODING PRACTICE

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ties of water that are by-passing through the more permeable layers will have to be handled in order to recover relatively small volumes of oil from the less permeable ones. In the case of the delayed drilling, a greater part of the work necessary to move oil from the intake toward the producing well is accomplished before this by-passing occurs; hence more oil is recovered with a smaller volume of water. In carrying out a delayed drilling program all old wells must be carefully plugged off at the top of the sand. Sufficient information is not yet at hand to determine to just what extent delayed drilling will overcome the difficulties of handling sands made up of layers of varying permeabilities. It seems, however, that it offers some possibilities where the more permeable layers do not constitute too large a percentage of the total thickness and the difference in permeability between the various layers is not too great.

Types of Intensive Flood Patterns

Several other patterns for intensive flooding besides the five-spot have been employed on a few properties. These are shown together with the five-spot. In each example illustrated, a square 40 acres in extent, and therefore 1,320 feet on a side and a distance of 165 feet between intake and producing wells, has been assumed. The latter is a somewhat closer spacing than is ordinarily used in actual practice.

In the case of the five-spot pattern, there are 40 water intakes and 41 producing wells, making a total of 81 wells. Each of the interior oil wells has a four-way drive working toward it, while the border ones have a three-way drive.

In the nine-spot pattern, the unit is a square, twice the size of the five-spot square. Four water intakes are drilled, one at each corner of the square, and four oil wells, one on each side half way between the water intakes. Each oil well, therefore, has a two-way drive acting upon it. When the four oil wells are watered out, they are converted into water intakes and a fifth oil well is drilled at the center of the square, the operation at this stage being converted into a five-spot. The area within the square drained by the first four oil wells, assuming that the pressure and sand conditions are uniform, is shown by the horizontal cross-hatching. That drained by the fifth well is shown by the vertical. A comparison of the shaded and unshaded areas within the boundaries of the unit squares of the five-spot and nine-spot patterns shows that the ratio of untouched areas to the total in the two is the same. In the case of the nine-spot, however, there is a possibility that by applying a somewhat greater pressure at the four corner wells during the second stage of the operation, a part at least of the oil in the untouched areas may be caused to move toward the center well, as indicated by the dotted area in the lower left-hand corner. With the possible exception of a somewhat higher recovery per acre, the nine-spot offers no material advantage over the five-spot, and a number of disadvantages. The total number of wells required is the same, and by drilling them at two different periods the cost will probably be somewhat greater; also, one-half of the wells have to be tubed twice, once for pumping oil and once to take water. The time required to deplete a particular tract will be at least twice as great. If the first set of oil wells are prematurely converted into water intakes, the recovery per acre may even be less than in the case of the five-spot.

Seven-Spot Pattern

The seven-spot pattern consists of a hexagon with wells located at the six corners and at the center. There are two ways of applying this type of flood; one to make the center well a water intake and the six surrounding ones producers, thus giving a three-way drive on each oil well, or making the outside wells water intakes and the center one an oil well, giving a six-way drive. One or two floods of both types are in existence in the Bradford Field at the present time. The same number of wells are required in each case and this is greater than in the five-spot pattern. In the particular case illustrated, at least 85 wells are necessary as compared to 81 in the five-spot. This type of pattern is more difficult to adjust to the boundaries of a particular tract than the five-spot. As is shown by the horizontally cross-hatched areas in the hexagons, the area drained is the same but in the case of the pattern with the oil well at the center, depletion should take place in about one-half the time, as the water has access to the sand through approximately twice as many intakes. In the case of the pattern with the water intake at the center of the hexagon, the plan of operation calls for the conversion of alternate oil wells around the circumference of the hexagon into water intakes as soon as they are watered out, the idea being that the oil remaining in the untouched areas between adjacent oil wells will thus be recovered by instituting a cross-drive, as shown by the dotted area in the southwest corner of the hexagon. That this will actually happen, however, is very doubtful, for, as Herold has pointed out, the globules of oil and bubbles of gas remaining in this area will offer a much greater resistance to the water drive than the surrounding flooded out area, causing the water to pass around rather than through it.

Ratios Untouched

Comparing the ratios of untouched to the total area, the difference between the seven-spot and five-spot patterns, not considering the possible recovery by the later cross-drive in the case of the three-way drive application of the former pattern, is comparatively small. Assuming uniform sand conditions and pressures, by graphical methods using a planimeter to measure areas, it was found that where the pressure applied was such as to leave 30.1 per cent of the area untouched in the case of the five-spot, 27.1 per cent was untouched in the seven-spot; when the pressure was such as to leave 17.3 per cent untouched in the former, 13.9 per cent was untouched in the latter; and when the pressure was such as to leave 2.9 per cent in the former, 1.5 per cent was left in the latter. This difference is not much more than sufficient to pay for the cost of the extra wells required for the seven-spot. With the oil well at the center of the seven-spot, a tract will be depleted somewhat more rapidly than in the case of the five-spot, while where the center well is made the intake well, depletion will take longer. The seven-spot has not impressed most operators as possessing sufficiently marked advantages over the five-spot pattern to warrant its adoption, and hence has been but little used.

Pressure floods combined with the five-spot pattern in actual operation possess a spacing ranging all the way from 215 feet on a side, making the distance between intake and producing wells 152 feet to 320 feet on a side, making the latter distance 226 feet. There are only a few nine-spot floods in existence. Some of these have a distance as great as 225 feet between water intake and producing well along the sides. A spacing of 150 feet between wells has been used in the case of one seven-spot pattern where the intake well has been placed at the center and 175 feet where the center well has been made the producing well.

A few operators have based their selection of the distance between wells on the information obtained from core studies of the sand underneath the particular tract developed. The majority, however, have adopted a particular spacing on the basis of results obtained on adjacent tracts by the older methods of flooding or have followed the practice employed by their neighbors where this has given indications of yielding good results.

Although the Bradford Pool is located on a well-defined plunging anticline, the dip of the sand underneath an individual property in the majority of cases is not sufficiently great to be taken into consideration in laying out an intensive flood pattern. Variations in the character of the sand itself, on the other hand, with respect to thickness, porosity, etc., as shown by core studies, are often sufficiently great to warrant the adjustment of the spacing of the wells to them in order to obtain the best results.

Water Supply

When it is realized that intake wells under the present system of intensive pressure flooding require from 35 to 200 bbls. of water each per day, the importance of an adequate water supply at once becomes apparent. It was soon discovered that the available supply of subsurface water on many properties was

not sufficient to carry on an intensive flooding program and additional supplies had to be obtained from other sources.

The bed-rock formations underlying the Bradford Field, with the exception of the Olean and Knapp sandstones and conglomerates, which are confined largely to the southern part of the field where they cap rather broad divides, contain no well-defined water-bearing horizons. The sandstones that occur below the Knapp are usually fine grained and shaly in character. They are low in porosity and are lenticular in extent. The major portion of the strata below the Knapp consists of sandy shale and shales. Available subsurface water supplies in these beds are confined to fractures and local sandy lenses, usually within the upper 300 feet and rarely below 500 feet, regardless of the horizon at which a particular well starts. While customarily the quantity of water in this upper zone was adequate for the type of slow-moving floods formerly employed, the supply is not sufficient for the intensive floods that are now applied.

Fortunately, a considerable number of the larger valleys have in recent geologic time been filled with alluvium to depths, in some instances amounting to 250 feet. Gound water draining down the slopes through the loose material covering the hillsides enters the alluvial deposits in large quantities. As these deposits are still in an unconsolidated condition, they are capable of holding relatively large volumes of water in contrast to the sandy shales and shales that constitute most of the bed rock. Wells drilled to the base of these deposits yield in places as much as 3,000 to 7,500 bbls. of water per day. In many places water confined in sandy layers near the base of such deposits is under sufficient head to rise to the surface when a well penetrates them. It is a common sight along major valleys to see such water rising to the surface between the drive pipe and casing.

This source of water supply is being utilized to a greater and greater extent by operators installing pressure floods and it is doubtful, if developments continue at the rate prevailing during the past summer, whether even this source will prove adequate. It will probably become necessary to go outside the field for additional supplies. One company whose properties are located mostly along divides rather than in the valleys has already commenced construction work on a 24-inch pipe line to convey water from wells drilled in the alluvium of the Allegheny Valley below Olean, N. Y., to its properties in the Bradford Field, a distance of approximately 9½ miles.

The quality of water must also be taken into consideration. No substances must be present that will tend to seal off the minute pores in the sand around the walls of the intake and thus prevent the further entrance of water. The deleterious substances most commonly present are extremely fine silt in mechanical suspension and iron salts in solution. The former is caught in the fine pores of the sand. As the water is practically saturated with oxygen, the latter tend to oxidize and precipitate out in the pores as hydrated iron oxide. Thorough aeration followed by settling and sand filtration are the remedies applied. A little alum is sometimes added before filtration. The iron content of the water in the alluvial deposits varies greatly from place to place. Around some wells where such water issues from between the drive pipe and casing, considerable deposits of hydrated iron oxides, such as limonite, accumulate, while around others no trace can be observed.

No chemicals, such as sodium carbonate and other so-called flooding agents, are being added to the water at the present time to aid in the removal of the adsorbed oil from the sand grains, the field tests with sodium carbonate, carried on in 1926, having given no positive results.

Examples of Some Results

A five-spot flood on a tract of 25 acres in the Bradford Field during the first 25 months has produced a total of 102,298 bbls. of oil, an average of 4,092 bbls. per acre. The total thickness of the sand ranges from 35 to 56 feet, the average being 48 feet. In as much as the intake wells were tubed to take subsurface water only and the depth to the top of the sand ranges from 1,304 to 1,641 feet, the maximum pressure possible ranges from 550 to 700 pounds per square inch. The water intake and producing wells were drilled simultaneously and the latter were put on production as soon as completed.

The time that the first eight wells were put on production and the total quantity of oil and water produced during the 14-month period from December 1, 1927, to February 1, 1929, by these wells are given in Table 1. Wells 7 and 9 afford an interesting contrast. Well 7 drains an area of 1.76 acres, hence during the 14-month period produced at the rate of 6,062 bbls. per acre, while Well 9, draining an area of 1.70 acres, produced at the rate of 3,882 bbls. The total thickness of the sand in these two and in No. 2 is the same, namely 53 feet. A slight complication exists in that some water had already entered the sand in the area drained by Well 7 through an old near-by well, but it is questionable whether any appreciable quantity of oil had been pushed over on to the area from the outside, although no doubt a bank of oil had accumulated in the area ahead of the water. The behavior of Well 9 undoubtedly is due to by-passing at an early stage in the life of the well. Wells 1, 2, 3 and 8 are located along the boundaries of the tract and hence have only a three-way drive acting upon them. The production of Wells 4 and 6 has been affected by the presence of old producing wells in their vicinity.

pounds pressure. The action of the pressure was relatively quick, in many cases bringing wells having average normal production of 0.25 bbl. per day up to as high as 12 bbls. per day in less than two months. While all of the 41 wells show some effects from pressure, only 22 of them have gained the full effects of it. The production from these wells was 3,474 bbls. in 1925, 15,697 bbls. in 1926, and 18,524 bbls. in 1927. The 1928 production is expected to be only slightly lower than that shown by the 1927 figures. (This was 16,418 bbls.) Waterflooding has played no part in this recovery and it is interesting to note that only one well has been drilled in this area since pressure was applied.

Taking the 1925 production as the natural production of the wells involved, an analysis of the above figures shows that this was increased 4.5 times during the first year that the air-drive was in operation, 5.3 times during the second year, and 4.7 times during the third year. The air-drive was discontinued at the end of 1928. Inasmuch as nearly 10,000 bbls. of the 50,639 bbls. recovered from the 266 acres during the three years that the air-drive was in operation can be attributed to natural production, the increased recovery for the three years due to the air-drive amounted to only a little over 150 bbls. per acre.

During 1929, at least three cores were taken in the area in which the air-drive described above proved effective. In each case a condition similar to that shown in Core 3 of Figure 2 was revealed. In this core the sand was found to consist of three parts; an upper portion, 18.26 feet thick, with an average porosity of 12.7 per cent, a middle portion, a so-called "loose streak," 7.44 feet thick with an average porosity of 23.3 per cent, and a lower portion, containing 18.11 feet of sand with an average porosity of 14.9 per cent. Three samples tested from the upper portion possessed an average oil content of 43 per cent by volume of the total pore space, one sample from the middle portion, 39 per cent, and two samples from the lower portion, an average of 50 per cent. On the basis of these tests, there are present 7,700 bbls. of oil per acre in the upper, 5,200 bbls. in the middle, and 10,500 bbls. in the lower portion—a total of 23,400 bbls. for the entire sand body.

Outside the 266 acres mentioned, no appreciable increases in oil production by the air-drive, even when the pressure was raised to 475 pounds, were observed on adjacent parts of the same property. None of the numerous cores taken in these adjacent areas show the middle so-called "loose streak." There can be no doubt that on this particular property practically the entire increase in production due to the air-drive came from the middle layer of somewhat coarser and much more porous sand. Wherever this layer is absent, the air-drive had practically no effect in bringing about an increase in production.

TABLE 1—PRODUCTION OF OIL AND WATER OF EIGHT WELLS ON 25-ACRE FIVE-SPOT FLOOD

Well No.	Date production started—	Total bbls. produced from Dec. 1, 1927, to Feb. 1, 1929 Oil	Water
1	September 27, 1927	2,241	1,720
2	September 21, 1927	3,522	3,066
3	November 2, 1927	1,937	1,310
4	October 3, 1927	4,966	14,366
6	October 31, 1927	5,794	11,403
7	September 21, 1927	10,669	9,039
8	November 16, 1927	3,081	3,286
9	November 28, 1927	6,599	21,129

Present Status of Air and Gas Drives

During the period from 1925 to 1928 inclusive, several experiments on a fairly large scale were under way in the Bradford Pool to determine the possibilities of employing compressed air to increase production, but these have now all been discontinued. There are still a few operators who are introducing gas into an occasional well or two on their properties in an attempt to bring about a combined gas and water drive on a producing well, but such practice is followed only on a limited scale, because of the small volume of natural gas that is now available for such purposes. The amount of oil produced in this way is almost negligible when compared to the total output of the field.

There are several reasons why the air drive has not been a success in the Bradford Field. The most important undoubtedly is the character of the sand itself. Over much of the field the sand is so fine and so low in porosity that pressures considerably greater than 400 pounds are necessary to produce an appreciable increase in production. Even where a reasonable degree of success has been attained by the use of compressed air, the results in terms of increased production per acre are so small when compared to what can be obtained by waterflooding that, in spite of the much higher development costs of the latter method, the opportunities for a profitable return on the capital invested are much better. This is particularly applicable to properties purchased at the high prices that have prevailed in recent years.

Haskell has described what has probably been the most successful air-drive operation in the Bradford Field, as follows:

The area consists of 41 wells, drilled from 1885 to 1895, situated on 266 acres. This gives a well spacing of one well to 6.48 acres. Pressure was first applied to this area in October, 1925, through nine intake wells, whose daily input averages 68,600 cubic feet of air at 300

SANTA FE SPRINGS IS GREATLY OVERRATED

(Continued from Page 37)

bbls. per day with the potential fixed at 1,058,890 bbls. based on conservative estimates made previous to the initiation of flow tests now under way in several fields. The amount of crude necessary to run to stills during 1930 to supply the estimated demand for refined products is 609,000 bbls. daily. For several years there has been a shut-in production of approximately 200,000 bbls. per day and since November 2, 1929, certain flush fields have been curtailed an additional 150,000 bbls., making a total curtailment of in excess of 350,000 bbls.

Unless crude production can be regulated to conform to the market requirements serious disturbances will be created which in the end will result in a breakdown of the price of crude oil and its products. During 1929, California produced 292,036,911 bbls. of crude, which was 60,054,314 bbls. more than was produced in 1928 and the storage of all products increased 44,001,222 bbls. Total fluid stocks at the end of 1929 aggregated 184,002,116 bbls. These stocks greatly exceed any economic requirements and the carrying charges put upon the industry a tremendous burden. Storage facilities are practically exhausted and further additions are unwarranted at the present price of crude oil.

If the balancing of crude production with current demand can be accomplished only by the law of supply and demand, the value of crude oil and its refined products will drop to unreasonable figures which will so retard development that large numbers of men will be thrown out of employment and those industries dependent upon the oil industry will likewise have to reduce their operations with similar effect. Approximately 24,000 men are employed in the oil business in California and 35,000 more in the allied industries wholly dependent upon the drilling of wells. The aggregate payroll of these groups totals approximately $150,000,000 annually. The future of the gas law is still unknown and until it is enforced operators will be obliged to curtail production to reduce the disparity between production and consumption in an effort to stabilize general conditions and prevent demoralization.

A.I.M.E. DISCUSSES UNIT OPERATION

(Continued from Page 37)

Bureau of Mines experimental station at Bartlesville, Okla., will outline recent studies on the recovery of oil from sands, and H. C. George and W. F. Cloud of the University of Oklahoma will talk on the effect of natural gas upon the viscosity, surface tension and general extrability of petroleum of various types.

Engineering Problems

Among the topics to be taken up in the general discussion will be problems in the cementing of oil wells, the preparation of drilling muds, corrosion of oil-field equipment and recent progress in water flooding. A talk by H. J. Struth on controlled gasoline supply as the key to oil prosperity will feature the petroleum economics portion of the program. Annual summaries on refining technology in 1929 will be presented by A. D. David, production review for 1929 by C. P. Watson, production engineering in 1929 by C. V. Millikan, petroleum economics in 1929 by Warren A. Sinsheimer, and a summary of unit operation by Earl Oliver.

The Petroleum Division will holds its annual dinner on Thursday evening at the Engineers Club. An impressive program of entertainment has been arranged with a number of inviting affairs scheduled for each day of the meeting.

Aside from the program for the Petroleum Division, there are a number of features on the program of other divisions which are attracting wide interest among oil men here, among them being the session to be devoted to geophysical prospecting. While this will be devoted largely to mining problems, there will be a talk on seismic propagation paths by Maurice Ewing and L. Don Leet and one on oil structure mapping by the Sundberg method which will be outlined by Theodore Zuschlag. The coal and coal products session also holds some interesting features for oil men, among which is a talk on the properties of coal which affect its uses for the manufacture of coal gas, water gas and producer gas, by Gilbert Francklynn.

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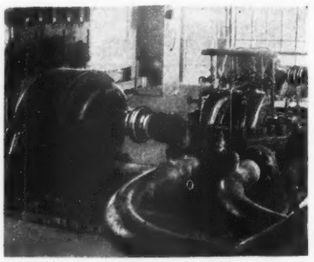

Oklahoma Pipe Line Company uses Fast's Couplings: Photograph from St. Louis, Okla.

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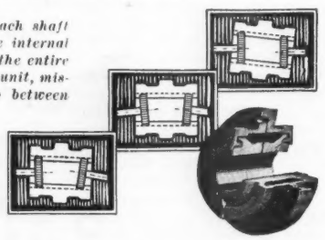

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CITY AND STATE.....

USE SAND BLAST IN CLEANING TANK CARS

(Continued from Page 145)

of the shell. It was then stencilled and report of test made and car put in service. S.C.N.X. 508 was next blasted. It took us 25 hours and 30 minutes to blast it as the paint appeared to be much heavier on this car than it did on S.C.N.X. 527. Taking so much longer to blast it necessarily run the cost up much higher on No. 508 than on No. 527. But if we had to get the paint off with brushes and scrapes I believe the cost would be much greater than blasting it; in fact, I think it would be impossible to scrape and brush all the paint and scale off as does the blaster.

We have further tried it out on the suction and discharge lines of the compressors, as well as on the roof of pump house, and I don't care how thick and hard the scale is it knocks it off and leaves the pipe in perfect condition for painting. Scale that you would have to use a hammer on, the blaster takes off right down to the notch leaving it bright and free from all mill scale.

CUT DISCOUNTED IN REFINERY MARKETS

(Continued from Page 36)

speed of recovery being largely dependent on the efforts being made to get the crude oil situation on a more healthy basis.

Effect on Contracts

The average reduction of approximately 25 cents in crude oil prices on Saturday and the 2-cent reduction in gasoline tank wagon and service station prices in the Standard of Indiana and Standard of Nebraska marketing territories on Monday will have some effect on contracts of Oklahoma refiners. Most of the fuel oil contracts which were recently closed by refiners with railroad buyers covering 1930, are based on crude oil prices. However, in most cases, the contracts were based on a minimum price of 75 cents for the fuel oil and with this as the base price refiners will continue to obtain this minimum for their fuel oil. In cases where there was no minimum provision, the reduction will be 15 cents which is 60 per cent of the 25-cent reduction in 36 gravity crude oil.

In the gasoline end, the new tank wagon and service station prices will apparently not lower the price received on contracts by a majority of the refiners. These contracts usually are based on published quotations with a guaranteed minimum of 4 cents or more between the delivered price and the tank wagon price. Due to the fact that the margins between tank car and tank wagon prices have been exceptionally wide, the contracts have been taking the published prices and even with the 2-cent reduction this situation will continue in most cases. The jobber thus still has what is generally considered a normal margin on which to operate.

Gasoline and Naphtha

Prices in Oklahoma on U. S. Motor gasoline ranged from 5¾ to 6½ cents with the latter the basis for weighted average prices. Immediately after the crude price reductions were announced buyers were endeavoring to obtain price concessions ranging to 5¼ cents. A few scattered sales at 5½ to 5⅝ cents were reported but they came mostly from areas outside Group 3.

Prices had improved before the crude price reductions were announced and most of the sellers were inclined to hold to these quotations. There is still some cheap material in the hands of brokers which can be sold for February delivery under 5¾ cents but it is not believed that the quantity is large.

Among the higher gravities prices were generally slightly higher. In Oklahoma 6⅛ appeared to be low on 60-62 400 endpoint, 6⅝ cents for 64-66 390 and 7¼ cents for 64-66 375. Naphtha demand and prices were unchanged.

Natural Gasoline

Natural gasolines are well sold up for the remainder of the month. Although the larger manufacturers are disposed to maintain prices at present levels any large new buying would bring generel advances. Gulf Coast buyers have made substantial purchases in addition to contracts and several manufacturers will not have any material to offer until March 1.

Grade A was scarce at 5½ to 5⅝ cents. Grade AA was steady at 5¼ cents with occasional sales at 5⅜ cents. The B grade was selling at 4½ cents, Grade BB 4¼ cents and Grade C 4⅛ to 4¼ cents.

Kerosene and Distillate

Some of the sellers believe that higher kerosene prices are just around the corner. The jobber demand has improved due to the actual increase in consumer demand. The price range in Oklahoma on Tuesday was the same as that which has prevailed since early in the year.

Distillates continue weak and it is due to this fact that some of the trade believe that kerosene prices will be slow in advancing. Some refiners shift from kerosene to distillate dependent on market conditions. Large supplies are available from the major refiners in the Middle West and this continues to weaken the Mid-Continent market.

Fuel Oil and Gas Oil

The high gravity fuel oils are sluggish in Oklahoma and the few refiners who have material to offer have been taking slightly lower prices over the past week. The industrial grades of gas oil are also lower and a low of 2⅝ cents has been established. The straw color low flash grades continue firm.

Lubricant and Wax

Lubricating oil and wax in Oklahoma continues to mark time. The spot demand is inactive but fortunately for the price situation there is no disposition to force material on the market so that the quotations are generally unchanged.

STATEMENT ON PRICES IS MADE BY TEAGLE

(Continued from Page 40)

the unescapable fact that the prevailing price of a barrel of crude cannot be, for any considerable period, more than the total realization from the sale of the products obtained therefrom. We believe in conservation in the interest of the public and the industry and stand ready to co-operate to the fullest extent in any workable plan to this end. For conservation to be effective the refiner and producer must each do his part."

SELL REFUGIO CRUDE OIL

NEW YORK, Feb. 15.—Gulf Coast Pipe Line Co., controlled by the W. F. Morgan interests, is reported this week to have closed contracts for 1,200,000 bbls. of crude oil.

Cities Service Co. has contracted for 1,000,000 bbls. to be delivered at the rate of 6,000 to 10,000 bbls. per day; The Texas Company will take 100,000 bbls. within six months, and Humble Oil & Refining Co. will also draw 100,000 bbls. within six months.

The Gulf Coast Pipe Line Co. is paralleling its 6-inch pipe line from the Refugio Field in Texas to Aransas Pass, a distance of 35 miles. The present line, with booster station, is running 15,000 bbls. per day. The new line, when completed, will have a capacity of 25,000 bbls. daily, and is expected to go into operation late this month.

OPENS CHICAGO OFFICE

CHICAGO, Feb. 15.—The Macmillan Petroleum Corp. has opened offices here for the sale of refined products from its refineries at Borger, Tex., and at El Dorado, Ark. The office is located at room 800, 624 S. Michigan Ave., and is under the management of Fred Norton. Mr. Norton has been connected with the Shell Petroleum Corp. in its industrial oils department.

MANITOBA GASOLINE TAX

CHATHAM, Ontario, Feb. 15.—The Manitoba provincial government is planing to impose a 2 cents per gallon tax on gasoline.

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OKLAHOMA GAS EXPERT GOES TO WEST VIRGINIA

Under the usual order of things it is customary to announce the movement of our younger engineers from the East to the West, but in this instance the reverse is the case, for Earle E. Clarke, for many years past connected with the Oklahoma Natural Gas Corp., is leaving Tulsa to become assistant to H. A. Wallace, president of the Charleston group of the Columbia Gas & Electric Co., and will make his future home in Charleston, W. Va.

Mr. Clark's new duties will be in connection with the executive work in distribution of gas for the United Fuel Gas Co., which operates in West Virginia and is a subsidiary of the Columbia Gas & Electric Co. of New York City, which

Earle E. Clark

has gas and electric plants in New York, Pennsylvania, Ohio, West Virginia, Kentucky and Maryland.

Mr. Clark comes of a family long identified with the petroleum industry. His father was a reporter on the old oil exchange in Oil City, Pa., and moved west to Nowata, Okla., where his son joined him after graduating from Purdue University in 1908 with a mechanical engineering degree.

Later Mr. Clark went to the Pittsburg Meter Co. school, a branch of the Westinghouse Co. of Pittsburgh, where he specialized in the study of gas meter design, in which science he has long been recognized as an authority and has served several years on the executive committee of the Oklahoma gas meter short course school held at Norman, Okla.

Prior to 1915 Mr. Clark was in charge of the distribution system of the Henry Oil Co. and stationed at Collinsville, Okla. He left that company to form a consulting engineering firm with R. S. Shade. Later he disposed of his interests in this business to Mr. Shade and went with the American Pipe Line Co., a subsidiary of the American Metal Co. of St. Louis, which was one of the five companies having gas leases in the Osage Nation.

In 1917 Mr. Clark made a connection with the Oklahoma Natural Gas Co. in the gas measurement department with headquarters in Tulsa. For 10 years Mr. Clark continued with this particular type of work with the Oklahoma Natural Gas Co. and when that company was reorganized and incorporated as the Oklahoma Natural Gas Corp. about two years ago he was made general superintendent of distribution, having charge of all gas distribution for that corporation, which serves about 55 towns and cities in Kansas, Texas and Oklahoma, and in doing this work has established for himself an enviable record for maintaining service even under conditions of extremely low temperatures such as existed during the winter just past.

During his residence in Tulsa Mr. Clark has been active in the affairs of the various engineering societies and was the chairman of the Mid-Continent section of the American Society of Mechanical Engineers. He also has been interested in the work of the national societies of the gas industry and is a member of the Natural Gas Association of America and the American Gas Association, having served on the executive committee of the distribution division of the latter association.

In addition to his duties with the Oklahoma Natural Gas Corp. and his activities in the various engineering and gas associations he has found time to work out details of several devices used in the distribution departments of the gas companies and among patents granted him are those covering a curb box meter top and several different types of apparatus for taking gravity of gas.

Mr. Clark plans to leave for Charleston, W. Va., to assume his new duties sometime between March 15 and April 1, and Mrs. Clark and the children will follow as soon as the public school term in Tulsa is completed for this year.

MR. WEYMOUTH TO SPEAK

Thomas R. Weymouth, president of the Oklahoma Natural Gas Corp., has accepted an invitation to lecture before the School of Engineering, Johns Hopkins University, Baltimore, at 4:15 o'clock, Tuesday afternoon, March 4, according to announcement made by Dr. Wilbert J. Huff, professor of gas engineering. Mr. Weymouth will speak on "Some Engineering Aspects of the Natural Gas Industry." He will represent the Committee on Co-operation with Educational Institutions of the American Gas Association.

NEW SURVEY OF CALIFORNIA

SAN FRANCISCO, Calif., Feb. 15.—For the first time since 1873, a thorough geological survey of California is under way. State Mineralogist Walter W. Bradley will spend approximately five weeks in the national capital conferring with state geologists and government engineers.

The last legislature appropriated $20,000 to inaugurate the survey. The covering of the State is expected to take 10 years and the total appropriations required are estimated at $500,000. A careful analysis of the structure of possible oil-bearing strata will be undertaken.

Late Fields

(Continued from Page 48)

No. 4 Lowery, in Section 12-11-3w, on the north side of the pool. The well found its production in the Simpson sand at 6,334-78 feet, and made 5,203 bbls. in 15 hours.

The deepest producing well in the State is the Tom Slick Oil Co.'s No. 1 Banta, SE cor. SW SE, Section 18-11-2w, which was fishing at a total depth of 6,736 feet. The well made 90 bbls. of oil on the previous day's gauge, from a sand at this depth.

New wells were also completed in the Konawa Pool. Champlin Oil & Refining Co.'s No. 2, in Section 8-6-6, was drilled 3 feet deeper to a total depth of 2,893 feet, where the test flowed 1,687 bbls. in 24 hours. The other new well in the Konawa Pool was the Gypsy Oil Co.'s No. 1 Harjoche, in Section 8-6-6, which swabbed 333 bbls. after a 5-quart shot from a total depth of 2,862 feet. The well will be given another shot.

The production from six completed wells in the Konawa Pool on the gauge of February 18 was 6,719 bbls. The gauge of each well was as follows:

Company—	Well No.	S-T-R	Bbls.
Gypsy	1	8-6-6	333
E. L. Harris	1&2	8-6-6	1,725
Independent	1	16-6-6	shut in
Champlin	1	9-6-6	1,411
Champlin	2	9-6-6	1,637
Empire	1	9-6-6	286
Empire	2	9-6-6	shut in
Prairie	1	17-6-6	1,277
Total			6,719

In the East Earlsboro Pool, Producers & Refiners Corp.'s No. 4 Jefferson, in Section 19-9-6, flowed 3,575 bbls. on the gas lift in 24 hours. The well was producing from the Wilcox sand at 4,187-4,213 feet. Amerada Petroleum Corp. and Dixie Oil Co.'s No. 2 Fullerton, in Section 19-9-6, shot the Wilcox sand at 4,160-89 feet, with 20 quarts and the well made 3,040 bbls. on the air lift in 24 hours.

WEST TEXAS

FORT WORTH, Tex., Feb. 18.—In Pecos County, West Texas, the Southern Crude Oil Purchasing Co.'s No. 1 McKenzie, NE cor. Section 2, Block 10, G.C.&S.F.R.R. Survey, was shut down at 1,497 feet after encountering gas sand at 1,440 feet and increasing at 1,492-97 feet. It is making 8,000,000 feet of gas.

In Culberson County, Grisham-Hunter's No. 1 Seay, SW cor. Section 16, Block 59, Township 7, T.P.R.R. Survey, encountered an estimated 5,000,000 feet of gas at 2,990 feet in hard lime. The rig burned and the tools are stuck in the hole.

In Ward County, Penn and the Atlantic Oil Producing Co.'s No. 2 Bennett in the SW cor. Section 16, Block 24, is drilling at 2,480 feet in lime and has 1,400 feet of oil in the hole. This makes the second well in this area. Sturm & Paine's No. 1 Cummings, Section 7, Block 32, H.&T.C. Survey, is shut down at 2,167 feet in sand after encountering show of oil at 2,160 feet.

Members of the Yates Pool advisory committee will meet with the Railroad Commission at the Stephen F. Austin Hotel February 21 to discuss further curtailment of the Yates Pool. The Railroad Commission granted a curtailment of 30,000 bbls. daily. This order will be discussed on the 21st.

SOUTHWEST TEXAS

Schedule No. 5 of the Darst Creek advisory committee prorating the runs of the Darst Creek Field in Guadalupe County for the period from February 16 to February 28 was made public Saturday, February 15 by H. H. Fitzpatrick, umpire. The schedule became effective at 7 a. m., February 16.

The figures are arrived at by using the following factors: Total number of units now in production 47; total potential production to participate in the 10,000-bbl. nomination 56,679 bbls., divided 50 per cent on units and 50 per cent on potential. Using the above factors the production allowance is .08821 of the unit potential.

Magnolia Petroleum Co. is not included in the 10,000-bbl. nomination allowable to the field but is producing its wells on the same basic proration. Its daily allowance added to that of the other operators makes a total of 11,201 bbls. daily from the field. Turman Oil Co.'s wells are not gauged and that company is not participating in the proration.

ALBERTA ASSOCIATION MEETS

CHATHAM, Ontario, Feb. 15.—Directors of the Oil and Gas Association of Alberta met at Calgary. Secretary H. Sawley reported Vancouver had added 30 new members. Adequate representation of the oil and gas interests in the Alberta legislature was discussed, and a resolution passed to support a candidate representing the oil, gas and mineral industries.

In view of the controversy regarding the alleged waste of helium in Turner Valley, the department of mines was asked to make public authoritative information with reference to recent analyses of Turner Valley gases. A resolution was also authorized favoring the registration of oil geologists operating in Alberta, the allegation being made that unqualified and incompetent persons were in some cases taking fees and making reports.

Dr. Charles Camsell, deputy minister of mines, notified the association that a new map of the Turner Valley Field had been completed, a topographical map was in course of publication, and maps of the Bragg Creek, Jumping Pound and Wildcat Hills areas were being prepared. President W. S. Herron presided.

STARTS LONG FLIGHT

Eugene de Penaloza, assistant sales manager of the aviation department of the Shell Petroleum Corp., St. Louis, left Miami, Fla., January 30 for Havana, Cuba, on the first leg of a 20,000-mile inspection flight over the route of the Pan-American-Grace Airways in the Greater and Lesser Antilles and South America. The object of the flight is to study motor fuel and motor oil requirements with the view of further extending air travel between United States and South American countries.

The flight was arranged by Lieutenant James H. Doolittle, noted flyer, who was recently appointed head of the Shell's aviation department.

J. & L. LECTURE SCHEDULE

Lecture dates announced for the annual oil country speaking trip of A. E. Crockett, manager of the bureau of instruction of the Jones & Laughlin Steel Corp., Pittsburgh, Pa., cover Mid-Continent and Gulf Coast areas, including three colleges. Mr. Crockett illustrates his lectures with motion pictures showing production of J & L oil country tubular products, which include lap-welded and seamless casing, tubing, drill pipe and line pipe. Detailed information on Mr. Crockett's lectures may be obtained from representatives of the Frick-Reid Supply Corp., the Jarecki Manufacturing Co., and the Norvell-Wilder Supply Co., J & L pipe distributors. Mr. Crockett's schedule, as announced by the Jones & Laughlin Corp., follows: February 24, Bartlesville, Okla.; February 25, Tulsa, Okla.; March 3, Norman, Okla. (Oklahoma University); March 4, Oklahoma City, Okla.; March 11, Dallas, Tex.; March 14, College Center, Tex. (University of Texas); March 15-19, Houston, Tex.; March 28-April 2, Beaumont, Tex.; April 4, Rolla, Mo. (School of Mines).

FIRST TURNER VALLEY OIL

CHATHAM, Ontario, Feb. 15.—Dr. T. E. Forster of Portland, Ore., claims that he was the first man to discover oil and gas seepages in the present Turner Valley. The discovery was made in 1911, a year before the Dingman discovery well started drilling.

Athey TRUSS WHEEL OIL FIELD WAGONS

ATHEYS are all steel general utility wagons for use behind tractors, either singly or in train. Carry maximum 10-ton loads under all operating conditions. They are the modern, economical means for hauling heavy loads. Made in 10, 15 and 20-ton capacities. Write for full information.

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Cable Address: "Trusswheel," Chicago
The Baldwin Locomotive Works,
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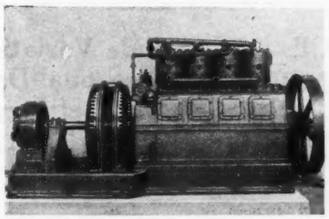
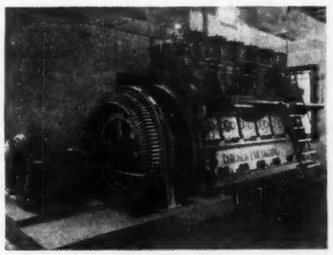


75 kv.-a, 400 r.p.m., E-M Alternator driven by gas engine



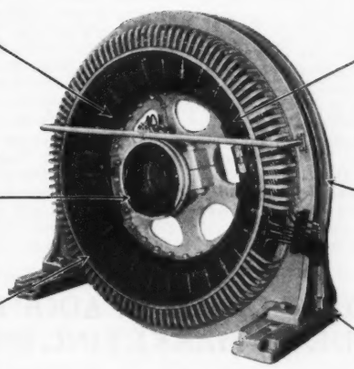
375 kv.-a, 257 r.p.m., E-M Alternator, Diesel engine-driven

FOR economical, efficient generation of electric power for isolated or private use, E-M Alternators merit first consideration. E-M Alternators are the "last word" in reliability, reflecting our long specialized experience. The chart just below calls attention to some important structural features. E-M Alternator ratings are standard as listed by the National Manufacturers Association; and E-M has also collaborated with engine builders in hooking up with standard engine ratings and speeds. For full information, write the Electric Machinery Mfg. Company, 1349 Tyler Street, N. E., Minneapolis, Minn. Tulsa Office, 217 East Archer Street.

1 Damper windings are electrically welded throughout. Insures permanency of damping characteristics. Permits easy paralleling.

2 Collector rings are thoroughly insulated and true running. They are easily aligned and any looseness developing in service can be easily taken up. Rings are nickel cast iron with polished contact surfaces. Brushes are easily accessible.

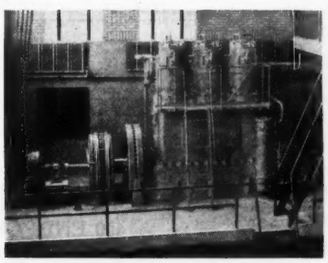
3 Welded steel coil guards are rigid, non-breakable.



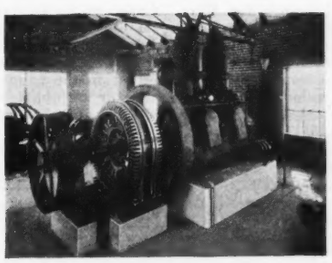
4 Split rotor enables mounting on crankshaft without removing crank discs. Shrink links insure tight joints in rim.

5 Exposed edges of core laminations, and ventilating spaces insure a cool running machine.

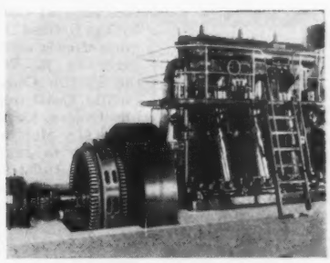
6 Adjusting screws for shifting stator provide accurate and easy lateral adjustment of air gap.



160 kv.-a, 277 r.p.m., Diesel engine-driven E-M Alternator



67 kv.-a, 300 r.p.m., Diesel engine-driven E-M Alternator



250 kv.-a, 327 r.p.m., Diesel engine-driven E-M Alternator

EM ALTERNATORS

FOR ECONOMICAL, DEPENDABLE GENERATION OF ELECTRICAL POWER

(A-110)

Of Interest to Sales Departments

Airplanes in 1929 Used 1,000,000 Bbls. Gasoline

A consumption of 1,000,000 bbls. of gasoline in 1929 by American aircraft is indicated in the report of the Aeronautical Chamber of Commerce of America, Inc., which states that airplanes flew nearly 200,000,000 miles.

No exact figure is available as to airplane consumption of gasoline but it is estimated that for an average figure 5 miles per gallon is representative. Some of the smaller planes use much less gasoline than this average, but the heavier transport planes which are the largest consumers use considerable more. Based on an average of 5 miles per gallon, airplanes consumed 40,000,000 gallons in 1929 or approximately 1,000,000 bbls.

The total demand (domestic consumption plus exports) from refineries in the United States during 1929 was 433,000,000 bbls. Thus, airplanes are still a very small factor in total gasoline consumption.

"America's major air transport lines, operating on regular schedules, flow more than 20,000,000 miles during the year, carried more than 7,000,000 pounds of mail and transported more than 165,000 passengers to double and treble previous peak figures," the report says.

"Passengers, mail and express were being flown more than 90,000 miles every 24 hours, serving a territory with 90,000,000 population. Scheduled transport lines were flying one-third of this distance between dusk and dawn on lighted airways, providing night service unparalleled anywhere else in the world.

"Although the number of air transport operators dropped from 32 to 27 during 1929 due to consolidations, the number of planes in service more than doubled, jumping from 294 to 619. Miles flown by the 27 major transport operators included in the survey totaled 20,242,891 as compared to 10,472,024 in 1928. Passenger business on air lines throughout the country tripled. In 1928, 52,934 passengers were carried, while last year saw 165,263 people ride the air lines in the United States.

"Mail poundage reported doubled the 1928 figures, 7,096,930 pounds being carried in 1929, as compared to 3,632,059 pounds in 1928 and 1,222,843 pounds in 1927. Express carried was reported at 197,538 pounds. Mail and express lines flew a total of 13,344,172 miles, while passengers were flown a total of 14,889,850 miles during 1929," according to the chamber report.

These figures in the aeronautical chamber report include only scheduled operations on regular passenger, mail and express lines, and did not include short hops or chartered flights.

Statistical estimates based on reports of typical operators and computed to include 800 aerial service operators in the United States show that their planes flew 104,336,560 miles and carried 2,995,530 passengers. Private flying in the United States increased from 12,000,000 to 25,000,000 miles during 1929, according to the report.

PERMIT 'GRIFFIN' TRADEMARK

Notwithstanding opposition by the Vacuum Oil Co., the United States Patent Office has allowed Walter & Co. of Rio de Janeiro to register "Griffin" as a trademark for lubricating oils and greases. The Vacuum company owns the "Gargoyle" trademark, but the patent office held that neither the names nor the representations of these two fanciful animals are similar.

DICKINSON EXPLAINS DIFFERENCE IN TWO GRADES OF PREMIUM FUEL

By Dr. H. C. Dickinson
Chief of the Division of Heat and Power, Bureau of Standards

An unfortunate confusion of the characteristics of "high test" and "antiknock" gasolines has developed from articles printed last November, in which an official of the automotive power plant section of the Bureau was represented as saying that adoption of premium gasolines as standard fuel for automobiles, regardless of climatic and other conditions, may increase the expense of operation without a corresponding gain in efficiency. This has since brought to the Bureau vigorous demands from manufacturers of fuels for a more detailed statement, giving the facts as ascertained by scientific and practical tests.

There is a clear distinction between "high test" and "antiknock" gasolines. The former is a gasoline of high volatility ordinarily sold at a premium over ordinary or straight commercial gasoline. Especially in cold weather, it gives easier starting than ordinary gasoline, quicker response, and less trouble from crankcase dilution. In warm weather the high temperatures increase the effective volatility of ordinary gasoline, so that there is little or no advantage from using "high test."

"Antiknock" gasolines are an entirely different product. They include, in general, gasolines made from certain petroleums, gasolines made by certain special cracking processes, gasolines blended with benzol, and Ethyl Gasolines or those containing tetraethyl lead. They differ from ordinary gasolines in that they are less likely to detonate or knock. A fuel which knocks in any particular engine gives less power and less miles per gallon than a similar fuel which does not.

Ethyl Gasoline, which is perhaps the most widely used of the special antiknock fuels, is understood to be a commercial gasoline containing a small amount of ethyl fluid. The latter is made up of tetraethyl lead plus certain other chemicals added to prevent the deposit of lead oxide in the engine. The amount of ethyl fluid added varies in different brands, depending upon the character of the particular commercial gasoline used, but is always small, being generally less than 1 part in 1,300 parts of gasoline by volume.

The sole effect of adding ethyl fluid to a given gasoline is to lessen the tendency to knock or detonate. The volatility of the gasoline, its heat value, and its specific gravity remain those of the commercial gasoline used. Ethyl Gasolines consequently vary somewhat as to their volatility, starting qualities, acceleration and other characteristics dependent on the gasoline alone.

If the knock is due to carbon, Ethyl Gasoline removes the knock, but not the carbon. Under certain conditions and in certain engines the untreated gasoline would knock unless the spark were excessively retarded. In such cases the use of Ethyl Gasoline permits normal spark advance without detonation and thereby improves power and fuel economy.

Since the advantages of using premium gasolines of the "high test" or of the "antiknock" variety may be considerable or may be nil, depending upon the weather and the kind and condition of the engine, the user must decide when the added cost is justified.

PACIFIC COAST LEADS IN ADOPTING NEW CODE OF MARKETING PRACTICES

Results of active work on the Pacific Coast in obtaining co-operation of marketers of petroleum products in adopting the National Code of Practices for Marketing Refined Products is shown in a table of code acceptances by sections prepared by R. W. Martin, secretary of the Pacific Coast code committee. The Pacific Coast region includes Washington, Oregon, California, Nevada and Arizona. Mr. Martin's tabulation of acceptances up to January 13, 1930, showing widespread distribution of the signers of the marketing code, follows:

A.P.I. List	Total names	Pacific Coast	Rocky Mountain	South-western	Mid-Continent	Middle Western	Eastern	No state indicated
Sept. 10, 1929	913	92	11	49	78	466	214	3
Sept. 18	95	1	0	3	7	47	36	1
Sept. 26	187	9	1	4	3	79	88	3
Oct. 4	72	2	1	2	22	12	28	5
Oct. 21	179	2	1	0	40	55	75	6
Nov. 6	168	0	1	9	3	88	63	4
Nov. 13	713	0	0	1	0	89	623	0
Nov. 19	262	0	0	0	0	8	254	0
Nov. 29	1,184	2	0	11	9	40	1,120	2
Dec. 12	1,027	651	0	2	6	88	275	5
Dec. 19	1,655	1,096	0	4	6	78	462	15
Dec. 26	1,321	812	0	5	0	62	435	7
Jan. 2, 1930	1,260	899	11	11	1	61	262	15
Jan. 13	1,197	1,049	0	2	0	41	88	17
Total	10,233	4,615	26	103	169	1,214	4,023	83

Explaining to the American Petroleum Institute's Division of Marketing the methods employed with such success in the Pacific Coast region, Mr. Martin wrote:

"Active solicitation of dealer acceptances to the code by the Pacific Coast state committees did not commence until the latter part of November, but the results secured indicate that very good work has been done and that the Pacific Coast is leading all other regions with 4,615 acceptances out of a total of 10,233. Actual acceptances reported to us by the state committees on the Pacific Coast up to January 15, 1930, were 8,053 out of a total of 33,600 accounts on this coast. Thus there are approximately 3,418 additional acceptances which are either in the hands of the state committees or en route to the Federal Trade Commission, but which have not as yet been reported to you. These will undoubtedly appear on lists sent out by you in the near future.

"The satisfactory results secured were accomplished by each of the members of this committee forwarding to the representative state committee lists of all their 100 per cent and split pump accounts. A letter was prepared and approved by this committee and forwarded on the stationery of each state committee to the dealers under their jurisdiction, together with a copy of the National

(Continued on Page 167)

Wide Variations in Seasonal Demand for Refinery Gasolines

The monthly percentage of refinery shipments of gasoline during 1929 did not vary greatly from the average for the five previous years according to a report compiled by the Western Petroleum Refiners Association. The data are based on the monthly reports of the Bureau of Mines showing shipments of gasoline from refineries in the United States.

According to the report 8.5 per cent of the 1929 shipments were shipped from the refineries in April. This compares with 8.1 per cent for the average April of previous years. Shipments in December, 1929, were relatively light totaling 7.5 per cent which compares with 8.1 per cent of previous years.

The report shows that January and February are the lightest months so far as refinery shipments are concerned. The increase starts in March and continues steadily from month to month until a peak is reached in August. The decline then starts ending in February.

The percentages for the Mid-Continent area show the same general month-to-month variation. Differing from the five-year average the largest shipments from Mid-Continent refineries last year was in August. For previous years the largest shipments were in July.

The following table shows the seasonal variation in gasoline shipments:

Total United States Refineries

	Average 1924-1928 inclusive per cent	Year 1929 per cent
January	6.5	6.3
February	6.2	6.2
March	7.1	7.5
April	8.1	8.5
May	9.0	9.1
June	9.1	9.0
July	9.7	9.9
August	10.0	10.0
September	9.1	8.9
October	8.9	8.9
November	8.2	8.2
December	8.1	7.5
Year	100.0	100.0

Total Mid-Continent Refineries

January	6.6	6.6
February	6.1	6.0
March	7.2	7.9
April	7.9	8.3
May	8.9	8.9
June	9.2	8.7
July	10.0	9.9
August	9.8	10.1
September	9.3	9.0
October	8.9	9.2
November	8.2	8.0
December	7.9	7.4
Year	100.0	100.0

GULF COMPANY MARKETS 400 ENDPOINT GASOLINE

Gulf Refining Co. is placing on the market in the East Coast territory a new antiknock gasoline, to be sold at the regular filling station basis. The new product is of 400 endpoint.

Announcing its new product, the company says: "That good Gulf gasoline is now antiknock quality 400°F. endpoint at no extra cost. This antiknock quality stops the knocks in the new high compression motors and greatly improves motor efficiency.

"The 400° F. endpoint gives instant and complete vaporization to the last drop—many motorists may not know what 400° F. endpoint means but every motorist can tell the difference in his car between the new good Gulf gasoline and the ordinary gasoline with 437° F. endpoint. Ordinary motor gasoline may be loaded with antiknock chemicals but the heavy non-burning ends remain to retard engine performance.

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California Petroleum Co.
Calpet Refining Co.
Canfield Oil Co.
Carter Oil Co.
Cities Service Refining Co.
Col. Tex. Refining Co.
Continental Oil Co.
Cosden Pipe Line Co.
Crew-Levick Co.
Cumberland Pipe Line Co.
Henry L. Doherty Co.
Empire Refineries, Inc.
Ford Motor Co.
General Petroleum Co.
Great Southern Refining Co.
Gulf Pipe Line Co.
Gulf Refining Co.
Humphreys Pure Oil Co.
Humble Oil & Refining Co.
Indian Territory Ill. Oil Co.
International Petroleum Co.
Invincible Oil Co.
Kendall Refining Co.
Lago Oil & Transport Co., Ltd.
Louisiana Oil Refining Corp.
Lubrite Refining Co.
Magnolia Petroleum Co.
Marland Refining Co.
Mexican Petroleum Corp.
National Refining Co.
Nederlandsche Koloniale Pet. Maatschappij
New Orleans Refining Co.
Pan American Petroleum & Transport Co.
Paragon Refining Co.
Petroleum Refiners, Ltd.
Phillips Petroleum Co.
Phoenix Oil Co., Ltd.
Pierce Petroleum Co.
Prudential Oil Co.
Pure Oil Co.
Roumania Consolidated Oil Fields, Ltd.
Roxana Petroleum Corp.
Russian Soviet Government
Shell Oil Company
Sinclair Refining Co.
Societa Romano Americana
Solar Refining Company
Southern Pacific Co.
Southern Pipe Line Co.
South Penn Oil Co.
Standard Oil Co. of Indiana
Standard Oil Co. of Kentucky
Standard Oil Co. of Louisiana
Standard Oil Co. of New Jersey
Standard Oil Co. of New York
Standard Oil Co. of Ohio
Standard Oil Co. of Venezuela
Standard Shipping Co.
Sun Oil Company
Texas Company
Texas Pacific Coal & Oil Co.
Tidal Refining Co.
Tidewater Oil Co.
Transcontinental Oil Co.
Union Oil Company
U. S. Steel Corp.
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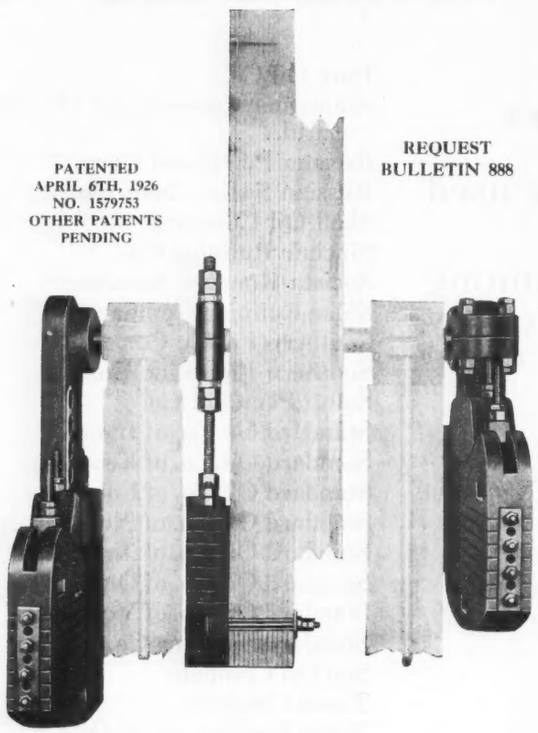

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MEXICO'S DECLINE AS PRODUCER CONTRASTED WITH VENEZUELA GAIN

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, Feb. 15.—The rapidly dwindling oil industry in Mexico within the past several years is a striking phenomenon compared with the rapidly growing importance of petroleum in Venezuela. The history of the petroleum industry does not record any previous instance of a decline in any other country in the world comparable to that which Mexico has experienced during the past few years and conditions leading up to this situation are naturally of wide interest to the petroleum industry. The cause of Mexico's decline as a leading factor in the world petroleum picture cannot be laid altogether at the door of the exhaustion of the country's petroleum deposits; there are indications justifying the belief that important undeveloped deposits still exist in Mexico of sufficient area and productivity to justify extensive exploitation under normal conditions by any active oil company. The absence of these "normal conditions," however, stand in the way of such exploitation and development. It is not for nothing that many of the oil companies with important holdings in Mexico are curtailing their operations and in some cases actually offering to sell all their properties, producing as well as nonproducing, at sacrifice prices, as well as their field installations and loading terminals.

Out of 21 large companies operating in Mexico in 1921, eight have gone out of business and of the remainder three are now in process of liquidation. World petroleum conditions during these years have not been sufficiently adverse to bring about such a situation and it is obvious, therefore, that internal conditions in Mexico have been largely instrumental for the anxiety of many companies to terminate their operations in that country.

From the position of the world's second largest producer of crude oil in 1925, when it produced 115,515,000 bbls. Mexico had receded to fourth place, with a production of 50,150,812 bbls. in 1928 and an estimated further reduction to 43,600,000 bbls. in 1929. Indications are that Mexico before many years will be superseded by both Persia and Colombia, thus bringing it to sixth place in the ranks of petroleum producing countries.

Supplanted by Venezuela

In contrast to this striking decline in Mexico there is the important increase in the production of Venezuela which, from sixth place in 1925, with a production of 19,687,000 bbls., rapidly climbed to second place in 1928 with a production of 110,000,000 bbls., which in turn is estimated to have reached a total of approximately 134,280,000 bbls. in 1929. It is a significant fact that the greater part of this increased production has been developed by companies which formerly drew almost exclusively on Mexican fields to supply foreign crude demands.

In view of the foregoing developments the question can well be asked why is there such an astounding difference in the trend of a great national industry in two countries such as Mexico and Venezuela, which are geographically similarly situated in relation to the important world markets?

The answer to that question, it seems pretty definitely established is that taxation—direct and indirect—is seriously retarding exploratory work in Mexico and virtually killing the Mexican petroleum industry. At the present time, when world oil prices are at a very low level, the taxes directly assessed on the industry in Mexico, plus the host of charges imposed for the cost of fiscalization, etc., and the burden of excessive general taxation in the Republic amount in all to over 32 cents on every barrel exported.

Mexico's Handicap

The Mexican producer is quite unable to compete with his more fortunate neighbor in Venezuela under these conditions. For example, fuel oil sold in the American market (New York), Europe, or South America, can be transported to those points more cheaply from Venezuela than from Mexico and, in addition to this, the Mexican producer has to pay a tax of 17 cents to the Mexican government for the privilege of exporting his fuel oil and at the present moment this tax is at least 25 per cent of the value of the fuel oil so exported. In other words, taking the present bunker fuel oil market in New York of $1.05 per bbl. in United States currency the net back to the exporter from Venezuela is about 65 cents, which the producer in that country receives to pay his cost of production, transportation and refining. The unfortunate producer in Mexico, however, is at a great disadvantage in competing for this business. The Mexico producer, first of all, has to bear an extra 6 cents per bbl. freight to the New York market, and then must pay the Mexican government 17 cents per bbl. for direct export taxes; hence his return is 40 cents per bbl. which, after refining cost, does not even recover the original cost of production, according to data on production costs compiled by a number of companies which have operated in Mexico during the past several years.

It is difficult to make an exact comparison of the position of the producers in the two countries, since there are a variety of crudes produced in both Mexico and Venezuela and a variety of markets. Two things are clear, however, one that the Venezuelan producer is geographically better situated for the principal markets of the world, and secondly that the Mexican producer is handicapped to the extent of an average of about 22 cents per bbl. in United States currency on his crude production in direct taxation alone and, as regards indirect taxation, is at a still further disadvantage.

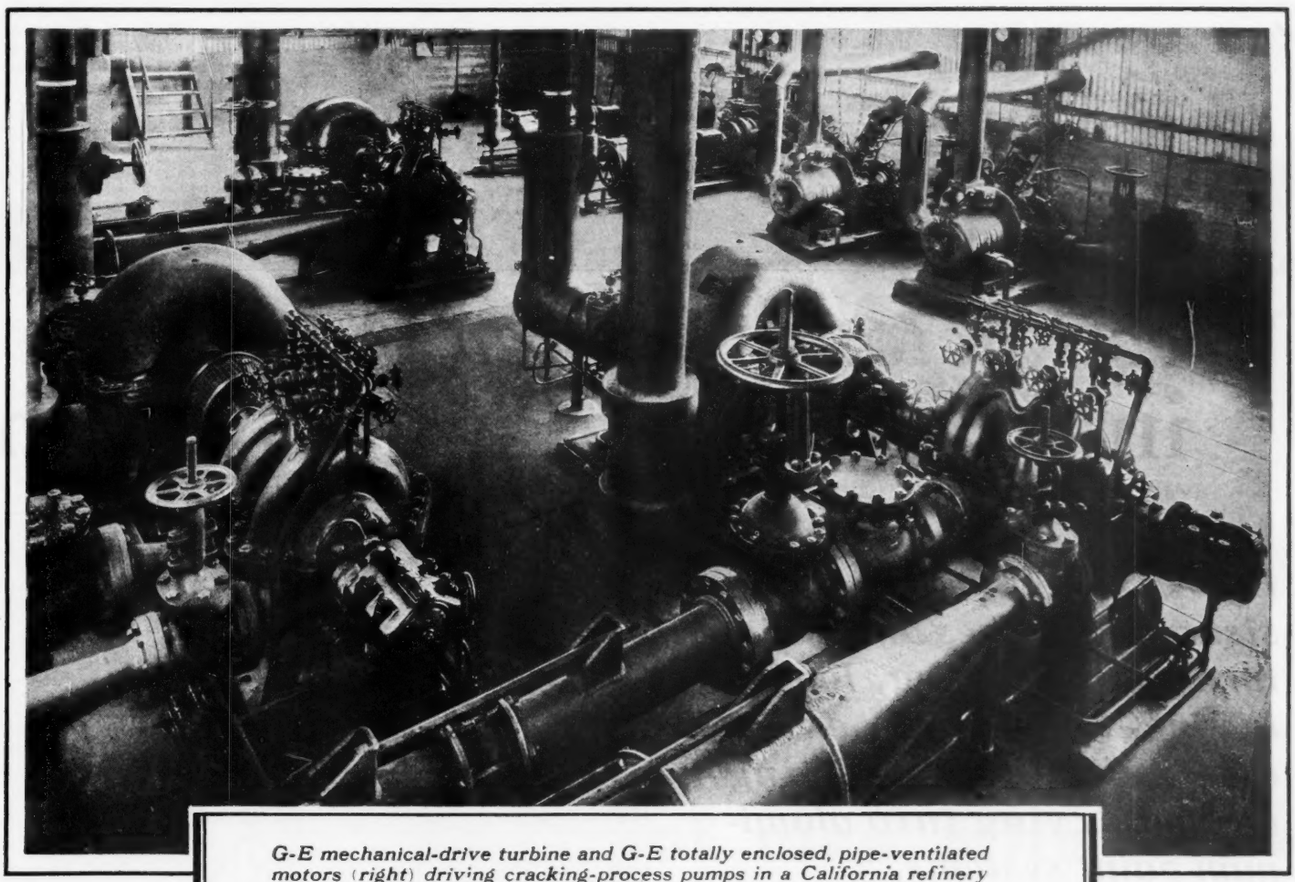
Comparative Costs

Taking two representative crudes, such as Mexican light crude and Mene Grande (Venezuela) crude the net back, after deducting refining, and an arbitrary figure of say 50 cents for production cost, shows a return based on present New York values of about 44 cents per bbl. to the Mexican producer and about 35 cents to the Venezuelan producer. The Mexican producer gets an apparent benefit by reason of the Mexican light crude being of a somewhat better quality than the Venezuelan crude, but out of the Mexican producer's gross profit the government takes 22 cents, or 50 per cent, leaving him with an apparent margin of 22 cents per bbl. compared with the Venezuelan producer's margin of 35 cents. Again, the Mexican producer is not able to produce crude as cheaply as his Venezuelan competitor and his cost of production, with all the further demands made upon him by the Mexican government, together with the high labor costs in that country, is at least 10 cents per bbl. higher, so that out of his gross profit he is taxed and penalized to the extent of nearly 75 per cent. Out of the paper margin remaining, about 12 cents, he has to pay all his overhead, depreciation, interest, etc., practically an impossible task.

Government regulations in Mexico governing the petroleum industry place so many restrictions on the industry and involve such great expense in their compliance as to act as a serious deterrent to petroleum operations, many companies have found. This is best illustrated by the great curtailment of operations in that country and the evident anxiety of some companies to clear out of Mexico entirely.

Question of Concessions

Aside from the many problems created by the excessive taxation on oil company operations there is furthermore the question of delays and insecurity in the issuance of concessions. Under the ex-



G-E mechanical-drive turbine and G-E totally enclosed, pipe-ventilated motors (right) driving cracking-process pumps in a California refinery

Keep the oil moving in your cracking stills

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IN a cracking plant, a failure of the high-pressure pumps is serious. The carbon which collects in the still means expensive repairs and may mean a serious fire.

You can get no better assurance of uninterrupted power than by using G-E mechanical-drive turbines to drive your pumps. And particularly where steam is needed for the process or for fire protection, these turbines can be installed and operated with unusual economy.

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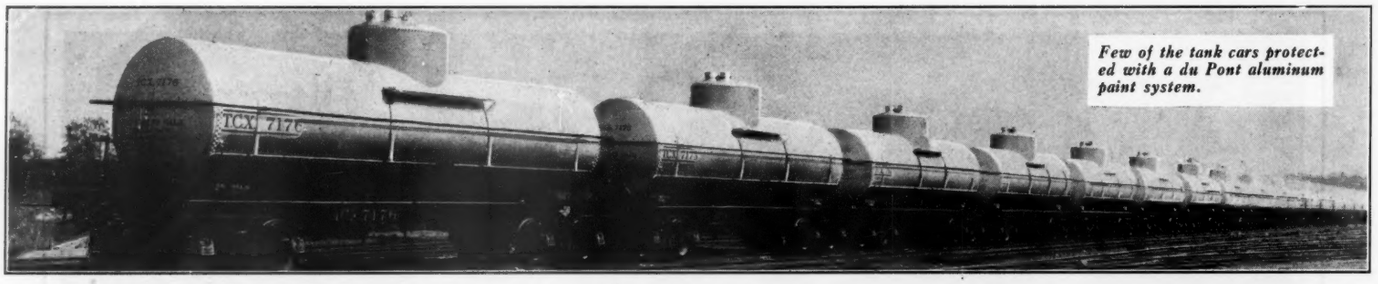

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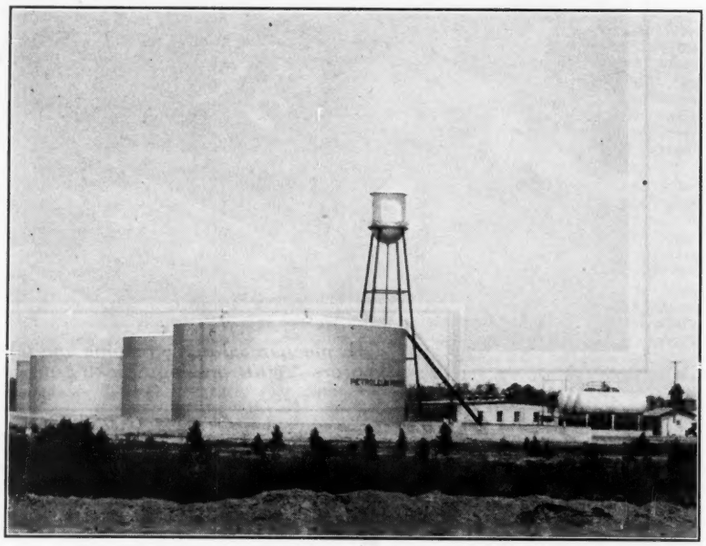
Three Factors Oil Men Asked for in Aluminum Paint Systems

How du Pont built high resistance to gases and moisture, better leafing, longer lasting brilliance, easier application, quick setting up and drying into aluminum paint systems.



Storage tanks of the Texas Company covered with a du Pont aluminum paint system to protect the metal and reduce evaporation.

ALUMINUM paint systems had proved their value in cutting evaporation losses when used on tankage. But to insure the durability and continued efficiency of these systems, special primers and vehicles were needed.

Du Pont chemists studied the problem — and began the development of aluminum paint systems that built protective coatings with greater initial and more enduring brilliance and better leafing qualities.

Now du Pont aluminum paint systems are built to withstand any exposure. Now they are simpler to handle and prepare. Now they hold their color and brilliance. Now the heat- and light-reflecting qualities are better than ever.

The basis of this success lies first in a specially prepared primer, the initial coat in du Pont aluminum paint systems.

No. 44 Aluminum Paint Primer

This primer is a long oil product, the pigment portion of which is made of basic lead chromate and sublimed blue lead. It is neutral in color so it is covered easily. It sets-up in 4 to 6 hours and dries hard in 18 to 24 hours. It is unaffected by dew on condensation.

The consistency of No. 44 primer allows application by brush or spray, and makes it dry to a hard, elastic film best suited to give great adhesion to the next coat—as well as maximum durability and rust inhibition. Normal expansion or contraction of the metal does not affect this primer or the coats it carries. Acid, sulphur dioxide, steam and salt water tests have shown its ability to withstand exposures commonly met in the oil industry.

Three Aluminum Paint Vehicles

The maximum leafing of the aluminum is promoted by the du Pont vehicles. In this way the finishing coat lays an impervious surface of corrosion-resisting armor right over the steel or iron surfaces that would rust easily—completing the aluminum paint systems.

Due to the character and percentages of the ingredients, these vehicles impart a very high gloss and brilliance to the aluminum paint film for a longer period of time—adding to the natural reflection of light and heat rays. These characteristics, in fact, are seldom found in aluminum vehicles and even then are not easily controlled. The fundamental precision of the pre-tested formulae and painstaking checking of each batch against the standard, insure the uniformity of the du Pont product in this respect.

DU PONT
REG. U.S. PAT. OFF.

The No. 129 vehicle is built particularly to withstand exposures in a high altitude with a dry atmosphere, little humidity and little rainfall. Intense heat and scorching sunlight are reflected from its surface and it keeps the tanks with their contents cool.

The No. 1431 aluminum paint vehicle withstands effectively the other extreme in exposure. A low altitude with moist atmosphere, high humidity and abnormal rainfall are successfully combated by this finish. Severe conditions of exposure as are found in gaseous areas leave this vehicle unharmed.

The No. 1606 vehicle is the latest of these to be developed, combining so far as possible the desirable characteristics of the two earlier products. It will handle any variation or combination of conditions in protecting tankage and structural steel from the effects of exposure. The vehicle combines maximum elasticity and maximum impermeability to give the utmost in a durable aluminum paint. It offers quick drying, ease of application, proper leafing and high resistance to acids, sulphur fumes, steam and salt water.

Du Pont aluminum paints come either ready-mixed or ready to mix.

Information more complete than is possible to give here, on du Pont Aluminum Paint Systems—as well as other du Pont finishes designed especially for the petroleum industry—will be sent on your request. Write to: E. I. du Pont de Nemours & Co., Inc., Petroleum Sales Dept., Independence Square, Philadelphia, Pa.; 2100 Elston Ave., Chicago, Ill.; 351 California St., San Francisco, Cal.

OTHER DU PONT PRODUCTS FOR THE PETROLEUM INDUSTRY

ASPHALT CHROMATE EMULSION, anti-corrosive for pipelines.
PETRO PAINT, a general purpose finish for the oil industry.
PRIMERS AND SPECIAL FINISHES
TANK CAR FINISHES
ANT-OXIDE and other metal, structural and storage paints.

isting petroleum law all drilling must be done under concessions. Leases executed prior to the new constitution, which went into effect May 1, 1927, are subject to a "confirmation of rights," that is, the government ratifies the rights acquired by such leases. The delay in issuing these corresponding confirmatory concessions is also a factor in retarding development operations as companies are reluctant to invest capital in drilling, field construction, etc., as long as there is a possibility, however remote, of the confirmatory concession being refused, perhaps on some alleged or insignificant technicality connected with the lessor's title. Some of the principal companies which filed their petitions over three years ago are still without concessions at this late date.

Labor costs also in Mexico have, as the inevitable result of radical laws, greatly increased in recent years. Employers are subject to such obligations as profit-sharing, inflated payment of overtime, vocational accidents, sickness, payment of three months' wages when discharging employes and workmen, construction of houses, etc., and the onus of keeping up schools, hospitals, etc., which is ordinarily incumbent upon the State. Further radical lgeislation is now being considered by the Mexican Congress in the form of a new labor law, which if it becomes law in its present form, will further increase the burden upon all industrial enterprises, including oil companies now operating in Mexico.

Revenue Declining

Mexican revenue accruing from production and export taxes has shown a rapid and consistent decline in recent years. The return from these taxes has declined since 1925 in the following amounts and percentages:

Year—	Total production and export taxes pesos	Per cent reduction since 1922	Total government revenue pesos	Per cent production and export taxes to total revenues
1922	85,980,144.51	...	285,017,577.00	30.16
1923	60,535,639.34	29.6	265,664,879.82	22.78
1924	54,621,992.10	36.5	284,477,120.16	19.20
1925	42,144,547.64	50.9	336,717,470.41	12.51
1926	34,821,472.23	58.3	317,401,721.48	10.08
1927	19,024,758.23	77.8	318,721,208.90	5.97
1928	11,266,317.30	87.2	292,120,000.00	3.86
1929	4,369,000.00	(six months).		

The following figures show the respective production of Mexico and Venezuela since 1925:

	(Figures shown in thousands of barrels)				
	1925	1926	1927	1928	1929*
Mexico	115,515	90,421	64,367	50,150	42,600
Venezuela	19,687	37,381	64,437	110,000	134,280

*Estimated.

Venezuela's Contrast

The record of Venezuela presents a direct contrast to the dismal picture presented by Mexico. Excessive taxation, radical legislation, and other drawbacks inherent to oil operations in Mexico are unknown in Venezuela. On the contrary, the government of the latter country has adopted a most broadminded policy with respect to the petroleum industry, and the protection afforded by the government has resulted in the growth of the Venezuelan petroleum industry by leaps and bounds.

Venezuela has not defaulted in its payments since 1905; it has reduced its so-called diplomatic debt of approximately $26,000,000 in 1925 to $5,600,000 in 1929; its bonds representing this diplomatic debt have risen in value from 44.57 per cent in 1907 to 99.24 per cent at the present time. In addition to meeting the service of its foreign debt, Venezuela has reduced its internal indebtedness and has accumulated a gold reserve of about $17,000,000.

Throughout its recent history, Venezuela has not only invited and welcomed foreign capital, but has jealously safeguarded its security and freedom in the exploration and exploitation of her natural resources. It has recognized, as indeed most new and undeveloped countries in the past have recognized, that only by such methods will foreign capital be attracted to the country. The Venezuelan petroleum industry has thus developed until it has reached the point where it is the most important in the country, yielding to the government a reasonable revenue and to the companies a fair return on their invested capital.

There are also certain physical factors that favor Venezuela today, while the drilling cost per unit well is about the same in each country, statistics compiled by leading oil companies operating in both countries show that one well in Venezuela produces about the same quantity of crude oil as five average wells drilled in Mexico during the past year. This enormous difference, entailing great additional costs in Mexico, is accounted for by the low percentage of dry holes and much greater production per well in Venezuela.

Must Lessen Burdens

From the above comparison between conditions in Venezuela and Mexico it is clear that before oil companies in the latter country can continue to exist, much less hope to prosper, substantial reductions will have to be made in the burdens to which industry in Mexico are subjected. Essentially a substantial decrease in the present high rate of taxation appears to be the only solution, from the standpoint of the petroleum industry, and until this occurs, there is very little prospect of any appreciable revival of the oil industry in Mexico. On the contrary, a further decline in operations, production, and exports would be the logical development. While companies still active in Mexico have abandoned all thought of a recurrence of the famed "Golden Lane" days of some few years back, there is apparently a strong belief that there are still important petroleum deposits remaining in that country for exploitation and development. Under existing conditions, however, with excessive taxation and high labor and shipping costs, the likelihood of Mexico staging any "comeback" in the petroleum world is extremely remote.

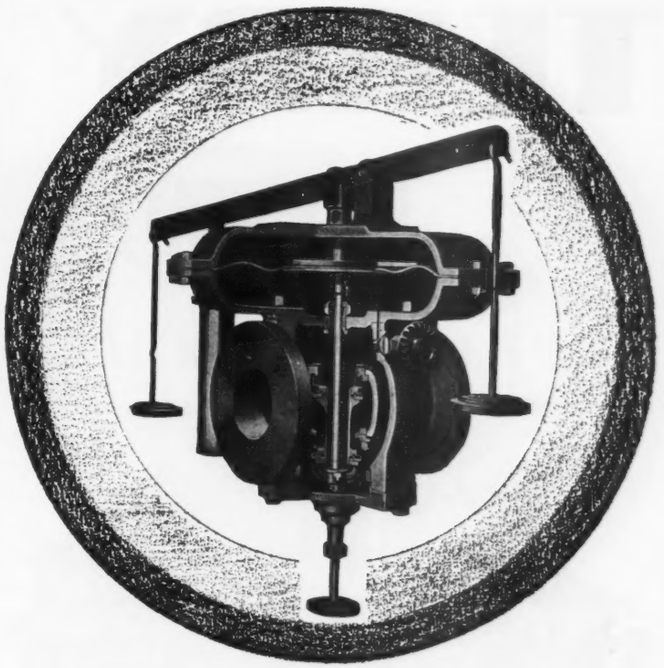
While all of the foregoing has dealt only with Venezuela as a direct competitor of Mexico, any modification of the proration on production in West Texas fields would release such huge supplies of cheap heavy crude as to virtually push Mexico off the map as a factor in the petroleum market in the United States.

The Chilean nitrate industry some years back presented a fitting parallel to the present petroleum situation in Mexico. At that time, the Chilean government imposed excessive export taxes on nitrate of soda. The tax burden on foreign producers in Chile became so heavy that synthetic nitrogen production made huge strides, and threatened the stability of the natural nitrate industry. The Chilean government, which had been heading in the same direction as Mexico with respect to taxation, radical labor legislation, etc., abruptly changed its tactics, reduced taxes on the nitrate industry, and extended co-operation to the nitrate industry in meeting foreign competition. The result has been a strong recovery in the nitrate industry in Chile.

PACIFIC COAST LEADS IN ADOPTING NEW CODE

(Continued from Page 162)

Code, and acceptance letter addressed to the Federal Trade Commission. A stamped envelope was enclosed addressed to the state committee, and in this way most of the letters came back to the state committees and were by them forwarded to Washington. By handling in this manner, we know just who have signed the acceptance letter and the sales representatives of the various companies are now following up those who have not responded to the original state committee letter."



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This Regulator accurately handles reductions in pressure anywhere from 250 pounds down to any desired service pressure. It is always tight in service, maintenance is infrequent but easy, high pressure fluctuations are negligible and it gives a smooth accurate flow.

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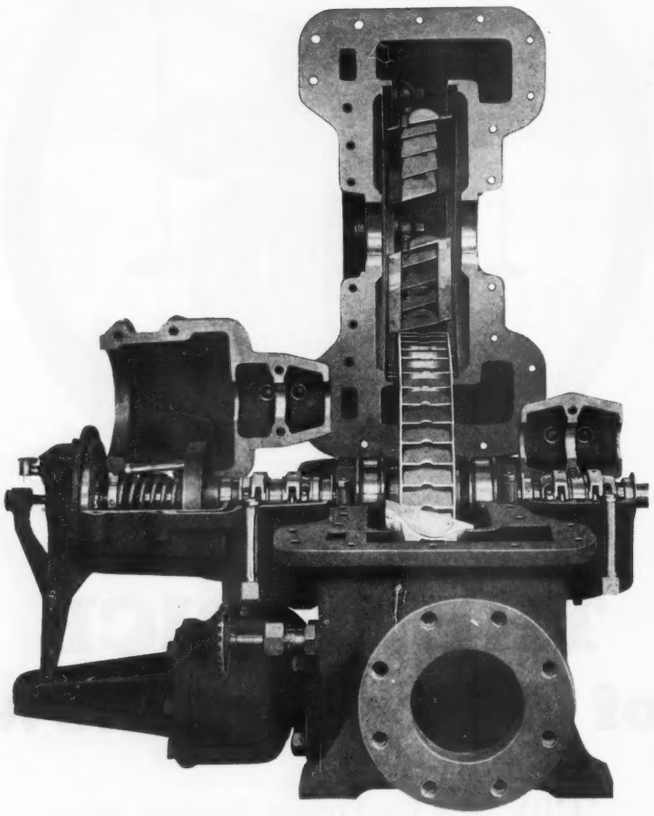

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Such construction makes for long life and ability to withstand severe operating conditions.

Both the axial and radial rotor clearances are large. End thrust cannot damage the blading.

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T-1053

GARDNER VISIONS 5,000,000,000 BBLS. COMING FROM THREE POOLS

By James H. Gardner

The more the writer analyzes the situation with respect to the future oil reserves of the United States, in the light of past estimates and from present knowledge, the larger they look.

There was a time when the million was a unit that looked large and the billion was a unit that must be handled with kid gloves. Everybody was afraid to deal with billions. A 1,000,000,000-bbl. oil pool has been considered something not heretofore known and scarcely possible and, if such existed in the United States, it should long ago have been brought to light.

But from drilling in new provinces for both shallow and deep sands and in old provinces for deeper sands, we are just now finding the 1,000,000,000-bbl. pools.

Take for example, the Kettleman Hills Pool in California and the Yates Pool in Texas; one a deep pool and the other a shallow pool, both new pools with very slight depletion.

On February 6, 1930, Dr. Ray Lyman Wilbur, Secretary of the Interior, in his radio address, published the following day in the Washington Evening Star, stated in speaking of Kettleman Hills that, "While the estimates vary, it is probable that there are between 2,500,000,000 and 4,000,000,000 bbls. of oil rich in gasoline and that there are untold billions of cubic feet of natural gas available."

The writer talked in Washington with Dr. George Otis Smith, director of the United States Geological Survey, who had just returned from California where he heard Carl Beal make an analysis of the probable yield of the Kettleman Hills Field. Doctor Smith said the facts seemed to be convincing that the field would likely produce 2,000,000,000 bbls., but that nearly everybody fell off their chairs when the statement was first made. The billion figures knocked them out temporarily until they realized the analysis was one of reason and logic.

In the same manner the estimates on the Yates Pool of Texas have been slow in general acceptance, because the billion is too large a unit to be readily conceived and not in line with past experience but, nevertheless, the cold analysis indicates the probability of 5,000,000,000 bbls. of oil in these two pools combined.

The new pool at Oklahoma City is well along in the picture of one of the great major pools with its outer boundary not yet so accurately defined as the two mentioned. But suppose we throw it in for good measure on the 5,000,000,000-bbl. estimate for the three pools combined. That alone is nearly half the amount of oil that the entire United States has produced. It would be ridiculous to say that this circumstance does not mean anything in particular. It speaks volumes on the oil resources of the United States.

Hundreds of Billions

The writer made the remark to Dr. George Otis Smith that it seemed now the oil resources of the United States would run into the hundreds of billions of barrels. When looked at in relation to what these three new pools alone will do and the probability of many others like them, together with extending discovery into new areas and new producing states, as well as deeper sands and deeper territory, the probabilities are that the whole United States can produce 100 times as much oil as the three pools mentioned. There are many large sedimentary basins which have been drilled only around the edges and discoveries like the Oklahoma City Pool and others show large resources exist down within these major basins. There are numerous such basins not yet tested in many states. Deep drilling permits the industry now to explore them and find the fields for all of them seem to contain minor folds for oil accumulation and probably larger pools than heretofore discovered will be made. It must be admitted that they are coming up larger as the years go by. The burden of proof is on the part of the fellow who says they do not exist and not on him who says they do exist.

There are only three ways that man knows anything; one is from authority, the second is from personal experience and the third is from reason. Absolutely all any man knows must fall into one or more of these three sources of knowledge.

Past Estimates All Wrong

Now our past supposed authority on the oil reserves of the United States, from pulblished estimates, has been no authority at all. It was no basis of knowledge. This country has already produced more oil in a few years time than the authority estimated for all time to come. Personal experience has triumphed over supposed authority on the matter of known resources. So, at the present time, we must combine personal experience with the authority of known conditions and draw on the knowledge of reason. We know from reason alone that vast oil resources remain undiscovered in the United States. There is no source of knowledge on the amount of undiscovered oil in barrels, nor in acres. But reason in the light of present knowledge is not severely drawn on in saying that the United States can produce 100 times as much oil as exists in the three pools recently discovered and above mentioned.

EASTERN FIELDS

(Continued from Page 68)

Grant district, the Penn Natural Gas Co. is drilling on the Pearl Freeman farm. In Union district, Lincoln County, the Russell Gas Co. and the Woodal Gas Co. are rigging up on the M. A. Stumps and R. L. Stowers farms. In Ravenwood district, Jackson County, H. C. Zogg & Co. are drilling at 2,300 feet on the George A. Delaney farm. In Sheridan district, Calhoun County, the Hope Natural Gas Co. is building a rig on the E. E. Wilson farm.

In Ellsworth district, Tyler County, the Wardin Drilling Co. is rigging up on the F. M. Travis farm. In Scott district, Boone County, the Owens Bottle & Machine Co. has started to drill on the V. A. Vanderlinde farm. In Sherman district, the Pure Oil Co. is building a rig on the L. P. & R. Tract B. In the same district, the Owens Bottle & Machane Co. has made locations on the Federal Coal Co.'s property. In Geary district, Roane County, the United Fuel Gas Co. has rigged up on the John Hunt farm and has started to drill on the B. L. Noe farm.

SOUTHWEST PENNSYLVANIA

In Wayne Township, Greene County, H. D. Freeland & Co.'s test on the Kent farm is a gasser in the Big Injun sand.

DECISION ON TAXATION

WASHINGTON, D. C., Feb. 15.—The Supreme Court of Montana, in the case of the Fulton Oil Co. against Toole County, Montana, has decided that an oil company which drills on certain land under an agreement that it would receive 75 per cent of the oil and gas found thereon cannot be obligated to pay a tax on 100 per cent of the net proceeds. In Montana the net proceeds of mines are assessed as personal property and when it appeared the oil company was entitled to only 75 per cent of the proceeds it could be assessed in that amount only.

ANGLO-PERSIAN BUYS TANKERS

NEW YORK, Feb. 15.—Anglo-Persian Oil Co., affiliated with the Royal Dutch-Shell group, has contracted in Great Britain for the construction of six 10,000-ton tankers. These are in addition to the two 10,000-ton oil carriers ordered in England by Anglo-Persian last month.

ECONOMY AND MODERN PRACTICE DEMAND THE ELIMINATION OF EXPANDED TUBES IN CRACKING STILLS

With the Stockham Fantz-Type Return Bend, tubes are *not rolled in*. Any tube or tubes can be changed without destroying any other tube in the bank. Position of tubes may be changed by revolving. Down-time is reduced to a minimum. The Stockham Fantz-Type Return Bend is especially adapted to high pressures and temperatures.

In actual operation, the Stockham Fantz-Type Return Bend is solving this important cracking still problem. Write our Petroleum Division for further information.

Los Angeles
March 16-23,
1930

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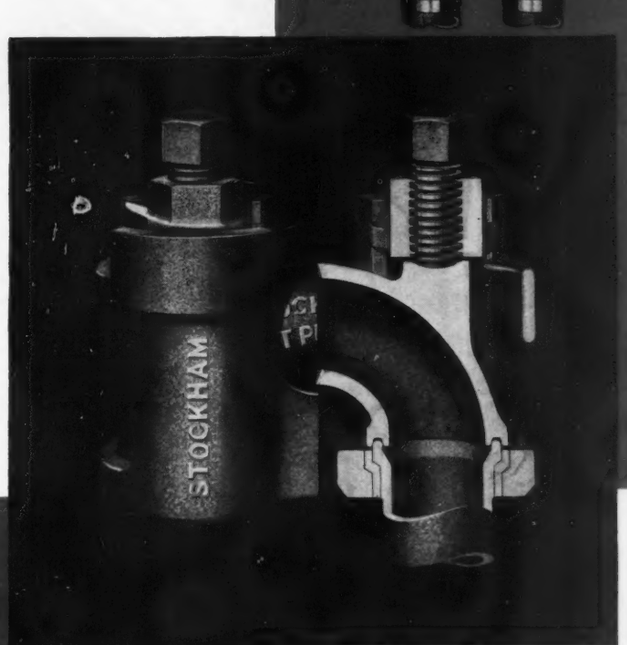

THE STOCKHAM (FANTZ-TYPE) RETURN BEND

Patents applied for in the United States and in Argentina, Canada, Colombia, Dutch East Indies, England, France, Germany, Holland, India, Italy, Japan, Mexico, Persia, Peru, Poland, Rumania, Trinidad, Venezuela, Australia, Dutch West Indies and Cuba.

Fight the WASTE of bottom water with EAGLE LEAD WOOL

Bottom water—one of the serious causes of production wastes in many oil fields—is plugged off instantly by Eagle Lead Wool. Producers have saved many thousands of barrels by using this effective conservation weapon. Stocked by all important supply houses—with cartridge containers in sizes to meet all requirements. Write us for free folder and further information.
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The light, low-cost metal for your sockets

Eagle Rope Socket Metal was designed especially for all socketing purposes. 35% lighter than Number 4 Babbitt—4 times as hard (Brinell hardness 64). Tough—will not crack or break under shocks and strains. At your dealer—or write us for free folder.

TEST BEGUN IN EASTERN UTAH IN HOPE OF FINDING MAJOR POOL

By Tolbert R. Ingram

DENVER, Colo., Feb. 15.—The Utah Southern Oil Co., the pioneer in the search for oil on the Colorado River structures south of Moab in eastern Utah is ready to commence drilling a test at Cisco, on the Denver & Rio Grande Western Railroad in Grand County, Utah, which will be of more than ordinary interest to the operators who have followed the exploration in that area. The location of the well, which will be known as No. 1 State, is 1,582 feet from the east line and 995 feet from the south line of Section 26-21s-23e, 1½ miles west of the town of Cisco.

The Utah Southern company has been engaged in exploration for oil in eastern Utah for a number of years and was the initiator of the operations on Cane Creek on the Colorado River, near Moab, which discovered oil and had promise of developing an important field. Its experience here and in other districts has given this company a large fund of direct and reliable information upon the oil possibilities of that section of the State.

It will be recalled that five years ago the Utah Southern, jointly with the Midwest interests, drilled the pioneer well on the NW NE, Section 6-27-21, on the Cane Creek Dome, on a narrow ledge of rock near the bed of the river, which attracted wide attention among the operators all over the country and was followed by an extensive wildcatting campaign. This well encountered a flow of gas estimated at 5,000,000 feet a day and 150 bbls. of oil per day at 2,028 feet. The rig caught fire and was destroyed. After the rig was replaced the well flowed as high as 350 bbls. a day by heads. However, mechanical difficulties prevented the shutting off of water and drilling was continued. At 3,650 feet more oil was encountered. The well was then drilled to 5,000 feet.

Salt Dome Theory

This was started as a Pennsylvanian test, but it will be recalled that immensely thick beds of salt were cut and a wide discussion of the conditions followed. The theory was held by some that Cane Creek was a salt dome similar to those in the Gulf Coast region. Other wells afterwards were drilled to test this theory. Snowden & McSweeny's No. 1 Prommel, SW NE, Section 5-27-21, went to 3,520 feet. Utah Southern's No. 1-A J. L. Shaffer, NE, Section 36-26-20, spotted 450 feet down structure, was drilled to 4,107 feet, the last 1,000 feet being mostly salt. Other tests were drilled on SE SE, Section 16-27-20, Shafer Dome, Section 28-40-18, Cedar Mesa Dome, and Section 13-23-20, Salt Valley Dome. All of these found the thick beds of salt as did several wells drilled by the General Petroleum Co. on the Paradox structure on the Colorado side, the Union Oil Co. of California on the Lisbon Dome, and others. The General Petroleum's test on NE SW, Section 4-46-17, on the Paradox Dome in Montrose County, Colorado, went to 6,300 feet and drilled through more than 5,000 feet of salt and still was in that formation when it stopped. Nevertheless, it cut a number of gas pockets in conglomerate, black lime, shale and gypsum, as well as having several good shows of oil. Utah Southern also drilled far to the south of this area where it did not find the thick beds of salt.

Out of the drilling experiences and expenditures, the Utah Southern company has evolved a new theory for eastern Utah. The evidence is conclusive that a large part of eastern Utah is underlain by a salt basin, similar in type to the Permian salt basin in West Texas and others in the United States, around the edges of which occurred notable oil fields.

Most of the wells which have been drilled in eastern Utah thus far evidently have been well out into the deep water area in this basin as is indicated by the tremendous thickness of salt and the almost continuous lime sections of Pennsylvanian age which have been penetrated. Recent correlations have convinced geologists that the marine embayment which was responsible for this salt basin existed at the time the Pennsylvanian series was deposited and that, therefore, the salt beds have Pennsylvanian limes both above and below them.

Petroliferous Character

Beginning more than a year ago, the Utah Southern engineers have been endeavoring to locate the shore or beach line of this old embayment and to find proper structural conditions upon it. The oil and gas discoveries which have been made in the Pennsylvanian series in eastern Utah have indicated definitely its petroliferous character and the recent well at Rattlesnake in northwestern New Mexico proves it capable of producing oil in commercial quantities. A continuous lime and salt section is, however, not very favorable material for either the source or reservoir for commercial oil accumulations.

It is expected that at or near the old beach line the lime and salt sections of the Pennsylvanian will change into shales and sands which are characteristic shallow water deposits. These would magnify greatly the source and reservoir conditions for petroleum in the Pennsylvanian and under proper structural conditions would promise a major oil pool.

Utah Southern engineers have discovered in the area at Cisco geological evidence which is not positive but is usually considered as very satisfactory, which would locate this old beach line even though it is under more than 2,000 feet of later formations.

The area surrounding Cisco has been detailed geologically and shows a very prominent anticlinal nose plunging westward which, in conjunction with the pinching out of the beach line beds, creates an excellent structure for a major accumulation of petroleum.

Oil and Gas Showings

Eight shallow wells drilled years ago on this structure found oil and gas showings at shallow depths. Some of these showings were substantial in quantity. Chemists who have analyzed this oil, which may still be bailed from one of these old wells, declare it to be identical with the Pennsylvanian oil which has been encountered in eastern Utah except that it is darker in color. It is therefore considered probable that it is migratory Pennsylvanian oil. This is another strong evidence of the occurrence of petroleum deposits in the Pennsylvanian beach line sands because there are faults upon the South Cisco structure which could form the channels for the slow migration of oil to these upper sands.

Utah Southern officials have stated that, in view of what they now know about eastern Utah, this project is the most favorable for the development of a major oil pool of any that they have undertaken either in the state or in the Rocky Mountains.

The test well will be drilled upon a block of Utah State land and if oil is developed it will bring the State of Utah into the list of states which are receiving oil royalties.

Operating conditions are favorable on upon the main anticline and the test well account of avialability of both railroad and truck transportation facilities, fuel, water and accommodations. Production from this area could be marketed very quickly after discovery.

Local Closures

Local closures have been discovered is located upon one of these closures in order to test the possibility of accumulation of oil in the shallow sands as well as in the deeper Pennsylvanian formations. The objective sands are Dakota at about 300 feet, McElmo from 500 to 900 feet and the Pennsylvanian series, the top of which is computed at 2,000 feet.

The test well is known as Utah Southern State No. 1. The erection of the derrick is completed and the crew is en-

Spread G & B Pipe Sealing Compound on the male threads only, after making certain that all threads are absolutely clean. Just this will insure an impenetrable seal for the joint.

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Here is a pipe sealing compound that sticks to its job through the hardest tests. Use it with the assurance that not a drop of gasoline or oil can leak away in your oil or gas pipe lines.

G & B Pipe Sealing Compound does not break down. It stands up as a perfect, permanent, insoluble joint-seal tomorrow or years from tomorrow. It lasts as long as the pipe is used. In handy packages G & B Pipe Sealing Compound comes in three convenient sizes, the ⅛ pint can at 15c; pint can at 75c; and the quart can for $1.45.

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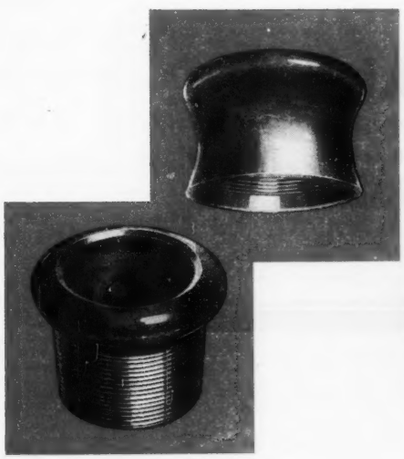
Colona Division · Pittsburgh, Pa.



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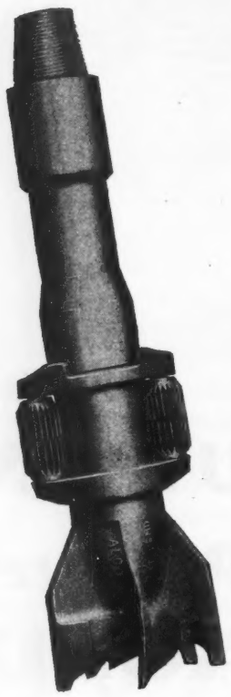
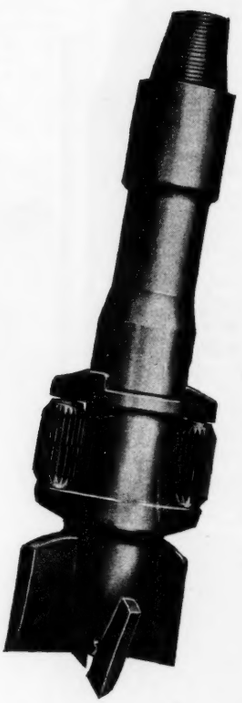
Low Cost



The body of the new Alco Roller Reamer is in the form of a collar on which the roller cutters are mounted. This collar fits over the sub of the reamer shank, slips into locking slots there, and is held securely in place by the shoulder of the bit.

Many thousand feet of clean, full-gauge hole already testify to the outstanding performance of the new ALCO Roller Reamer. Very simple in design, convenient to handle and to operate, it stays on the job and holds to gauge under the hardest drilling service.

For maximum footage at the most reasonable cost, run this new reamer with Alco 4-Way Hard Formation Bits. They combine highest durability, correct design, and simple, trouble-proof construction to give you more dollar for dollar service than any other bit you can use. Furnished in two types to meet all requirements for drilling in any formation.



Alco 4-Way Hard Formation Bits are furnished in two types. Type "O", shown at the left, has toothed or serrated blades; the regular solid-blade type, pictured above, is designed with two pilot blades. Both are demountable head bits.

Alco OIL TOOL CO. Inc.

P. O. Box "A", Compton, California

Taft • Ventura • Kettleman Hills

Houston TEXAS • Oklahoma City OKLAHOMA

OIL WELL ALCO TOOLS

straight hole through dipping strata of various degrees of hardness.

It is only recently that attention has been given to the measurement of bit pressures and their control. The well-known diaphram type of weight recorders, attached to the deadline of the casing, have shown only relative weights and the manufacturers have interested themselves primarily in the hoisting weights only. In few cases has their apparatus been calibrated for indicating definite weights. Further a constant multiplier must be used, depending on the number of lines used to support the casing blocks. This feature has been overcome by special dials for the various casing line arrangements. The recent development of the vernier gauge as an auxiliary has been a material improvement of this type of weight indicator. The hydraulically operated, reciprocally motioned, table has proven most advantageous in bit pressure control in that the weight-indicating gauge may be calibrated directly against the hydraulic pressure required in the "jack" cylinders supporting the column of drill pipe. The dial then reads directly the actual net weight on the bit. The hydraulic feed also permits an absolute uniform rate of speed.

J. T. Hayward of Tulsa, Okla., presented a paper[1] before the American Petroleum Institute of Chicago in December, last, which brings a new angle on the consideration of the subject of straight hole. In fine, it is Mr. Hayward's contention that the effect of high pump pressures through the restricted area of the bit openings causes a differential pressure in the drill pipe. That is, due to high pump pressure and restricted outlet, the pressure builds up in the drill pipe to an amount considerably greater than the hydrostatic pressure of the mud outside. The pressure may be considered as producing an elongating pressure on the drill pipe which puts it into tension by an appreciable amount. This amount of tension must be overcome, as described in previous paragraphs, before the pipe will flex or bend and thus permit deviation of the bit and crooked holes. As pointed out by Mr. Hayward, his report is preliminary and much data is required before definite conclusions as to the exact amount of tension, differential pressure, etc., can be arrived at. However, this and other articles show the trend of thought and the intensity of study that is being given to the matter of straight holes and the various angles from which it is being approached.

Used Successfully

That the conclusions arrived at in the foregoing paragraphs are correct has been amply demonstrated. In one case in a field notorious for its crooked holes, positively controlled and unvarying bit pressure, together with uniform feed, have produced a well which, on survey, shows a maximum deviation from the vertical of 8 feet at a depth of over 4,000 feet. The second, in an even more difficult field, had a deviation of 12 feet in 6,000 feet. The drilling time for the first of these wells has been about the average for the field. The second was the record for the field. Of course, there were no delays due to twist-offs or other mechanical trouble, which will, in large measure, be eliminated when holes are drilled straight and vertical.

In conclusion, it can be and has been clearly demonstrated that by the use of apparatus and equipment which will give the operator absolute knowledge of the amount of weight on the bit, and of the rate of feed, the drill pipe can be maintained in tension above the drill collar. With the pipe thus in tension at all times and with a suitably proportioned drill collar a straight vertical oil well can be drilled.

[1]The Oil and Gas Journal, October 17, 1929, Page 100; The Oil and Gas Journal, December 5, 1929, Page 57.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 50)

HARMON COUNTY

Harmon-Tex Oil Co.'s No. 1 Hoadley, NE cor. Sec. 17-4-24w ..... Shut down 700 ft.; to skid rig.
S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w.. Shut down 625 ft.

HARPER COUNTY

Empire's No. 1 Bruce, C NE SW Sec. 12-25-20w ..... Location.
Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w ..... Drlg. 7,115 ft.

HASKELL COUNTY

Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e ..... Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE SW Sec. 10-9-18e .. Shut down 2,387 ft.
Sanboise Gas' No. 1 Unknown, SW NW SE Sec. 32-9-21e .. Shut down 2,100 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 ..... Rig.
Canady et al's No. 1 Kanard, NW SW Sec. 29-9-12 ..... 1,000,000 ft. gas 2,284-90 ft.; total depth 2,815 ft.; shut down.
Irwin et al's No. 1 Jones, SE NW Sec. 30-5-10 ..... Rig on ground.

KAY COUNTY

Skelly and Empire's No. 1 Maple, SW cor. Sec. 20-27-4 .. Location.

KINGFISHER COUNTY

Superior Oil Co.'s No. 1 Story, SE cor. Sec. 25-19-5w .... Fishing 6,285 ft.
Galt Brown's No. 1 Wolf, NW SE Sec. 6-16-7w ..... Shut down 6,015 ft.

KIOWA COUNTY

Hyde et al's No. 1 Jones, SE cor. Sec. 23-3-18w ..... Shut down 490 ft.
Merrick Oil Co.'s No. 1 Kelly, NW cor. SE Sec. 20-7-17w. Shut down 1,500 ft.

LEFLORE COUNTY

Red Bank Oil Co.'s No. 1 fee, SE SW NW Sec. 23-9-24... Total depth 5,440 ft.; 15,000,000 ft. gas; shut down 5,488 ft.

LATTIMER COUNTY

Limestone O. & G. Co.'s No. 1 Shaw, NW cor. NE NW Sec. 23-5-18e ..... Drlg. 1,550 ft.

LOGAN COUNTY

Currier's No. 1 Young, C SW NE SW Sec. 34-17-4w .... Rig.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w.. Shut down 3,970 ft.

McINTOSH COUNTY

T. C. Young's No. 1 Derrison, Sec. 3-12-15 ..... Shut down 710 ft.
Jennings Bros.' No. 1 Crabtree, NW SW NE Sec. 31-10-14 ..... Shut down 4,100 ft.
Patterson and others' No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shot 240 qts. 5,446-5,559 ft.; shot went off up hole; fishing.

MUSKOGEE COUNTY

Mid-Western Oil Co.'s No. 1 Unknown, C NW SW Sec. 31-12-19 ..... Drlg. 400 ft.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .. Shut down 1,011 ft.

NOBLE COUNTY

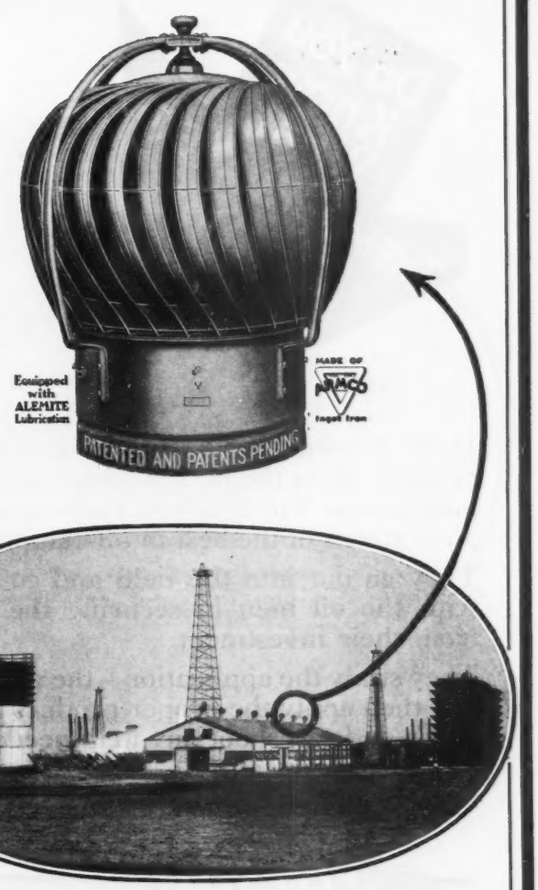
Gypsy Oil Co.'s No. 1 Bergstrom, SE NE Sec. 28-22-1w .. Rig.
Peerless et al's No. 1 Wentz, NW SW Sec. 22-23-1 ..... Drlg. 3,279-3,310 ft.; swabbed 95 bbls. 1 hour.

OKFUSKEE COUNTY

Irwin et al's No. 1 Davis, SE NW Sec. 16-13-9 ..... Rig.
Henry Oil Co.'s No. 1 Harjo, Sec. 36-12-9 ..... Shut down 2,795 ft.
E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10 .. Shut down 3,661 ft.

OKLAHOMA COUNTY

J. F. Cunniff, trustee's No. 1 Church Land, NE SW SE Sec. 17-12-4w ..... Drlg 1,280 ft.
Magnolia and Ramsey's No. 1 Johnson, C NE SW Sec. 35-13-3w ..... Drlg. 4,404 ft.
Ryan Consolidated's No. 1 Lawton, NE NW Sec. 3-11-2w. Drlg. 4,568 ft.
Tom Slick Oil Co.'s No. 1 Martin, C NW NW Sec. 13-13-1w ..... T. D. 6,971 ft.; water; plugging back.
Hall & Briscoe's No. 1 Holmes, NE cor. SW SE Sec. 10-11-3w ..... Drlg. 3,821 ft.



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They go out into the field and co-operate with the oil men in securing the utmost from their investment.

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They selected Mason Regulators only after months of the most careful study.

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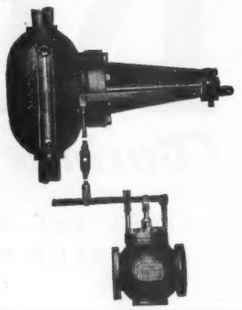


Mason Liquid Level Control with Balance Valve of Lever and Weight Type.

OSAGE COUNTY

Kay Co. Gas' No. 1, C N half NE Sec. 28-24-4 .....Drlg. 320 ft.
Continental Oil Co.'s No. 1, NW SE SE Sec. 24-24-5 ....Drlg. 1,045 ft.

PAWNEE COUNTY

Shaffer O. & R. Co.'s No. 1 Jones, SW NE Sec. 22-20-5..Location.
Cochran and others' No. 1 Green, NE cor. SW Sec. 16-23-5 .....Rig.

PITTSBURG COUNTY

Empire O. & R. Co.'s No. 1 Williams, C NE SE Sec. 33-7-16e .....Shut down 3,975 ft.
Kerr & Koy's No. 1 Hall, C NW NW Sec. 32-4-12 .....Shut down 3,502 ft.

POTTAWATOMIE COUNTY

Keister & Manning's No. 1 Rowlett, SW SE NE Sec. 30-8-4 .....Rigging up standard tools 4,254 ft.
Payne Drlg. Co.'s No. 1 Bullock, SE NE Sec. 22-6-3 ....Rigging up standard tools 3,932 ft.

ROGER MILLS COUNTY

Bucy & Stone's No. 1 Williams, C SW Sec. 23-12-24w ....Rig.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w ....Shut down 2,769 ft.

SEMINOLE COUNTY

Producers & Refiners' No. 1 Factor, NW SW Sec. 30-6-6 .....Rig.
Independent Oil & Gas Co.'s No. 1 Johnson, C NE NE Sec. 33-9-8 .....Rig.
Prairie Oil & Gas Co.'s No. 1 Anders, NW cor. Sec. 23-6-6 .....Rig.
Superior Oil Co.'s No. 1 Morgan, SE cor. Sec. 19-6-6 ....Spudded; shut down.
Magnolia's No. 1 Webster, NE SE NW Sec. 31-6-8 .....Rigging up standard tools 2,690 ft.
Sunray Oil Co.'s No. 1 Sunday, NW SE Sec. 25-5-5 .....Location.

WOODS COUNTY

Peerless O. & G. Co.'s No. 1 Crowell, C NW NE Sec. 23-28-16w .....Drlg. 3,480 ft.
S. K. Miller's No. 1 Copenhavers, NW cor. NW Sec. 18-24-13w .....Rigged up and shut down; abandoned.
Gypsy-Prairie and others' No. 1 Thompson, SE cor. SW Sec. 10-25-15w .....Fishing 6,104 ft.
Sinclair Oil & Gas Co.'s No. 1 Showwalter, C SW SW Sec. 33-27-16w .....Drlg. 6,739 ft.

WOODWARD COUNTY

Farrond et al's No. 1 Unknown, SE cor. SW SE Sec. 2-23-17w .....Shut down 1,387 ft.
Prairie Oil & Gas and others' No. 1 Wilber, NE cor. NW Sec. 23-23-17w .....Drlg. 6,050 ft.
Billy's Oil Co.'s No. 1 Watt, C SE Sec. 9-23-20w .....Drlg. 5,310 ft.
Burgoyne Bros.' No. 1 Merkins, SW cor. SE NE Sec. 15-21-19w .....Shut down 1,910 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

J. W. Ernest and Bryant's No. 1 Unknown, NW cor. Sec. 6-1-14 .....Abandoned 800 ft.
Bryant-Croxton's No. 1 Mason, NW NE NW Sec. 4-1s-14. Shut down 1,560 ft.
Bookshire's No. 1 Guinn, NW cor. Sec. 18-3s-10 .....Shut down 100 ft.

BRYAN COUNTY

Slab Oil Co.'s No. 1 Ryle, NW SE SE Sec. 27-6s-7 .....Location.
Marshall's No. 2 fee, C SW SE NW Sec. 26-5s-7 .....Shut down; 6-in. cag. 365 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE Sec. 36-9s-9e .....Shut down 2,025 ft.

CARTER COUNTY

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 .....Shut down 1,980 ft.

CHOCTAW COUNTY

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19e .....Shut down 1,346 ft.

COMANCHE COUNTY

Pelwin Oil Co.'s No. 1 Tafepirdy, C NW NE NE Sec. 5-1s-9w .....Location.

COTTON COUNTY

American Ref. Co.'s No. 1 Miller, SE SW Sec. 9-5s-12w..Shut down 2,085 ft.
T. Medlin's No. 1 Johns, SW SE Sec. 8-2s-9w .....Shut down 1,260 ft.

JEFFERSON COUNTY

Hart's No. 1 Standfield, C W half NE SE Sec. 33-7s-6w .....Drlg. 300 ft.

JOHNSTON COUNTY

N. A. Neff's No. 1 Chapman, C SW NW Sec. 20-4s-5 ....Location.

MARSHALL COUNTY

Golden Rule Oil Co.'s No. 1 Reeves-Gray, C NW SE NE Sec. 19-6s-6 .....Drlg. 300 ft.

McCURTAIN COUNTY

Utopia Pet. Co.'s No. 1 Unknown, SE NW Sec. 14-9s-25..Location abandoned.
Milton et al's No. 1 Vase, SW NW Sec. 26-6s-21 .....Shut down 1,800 ft.

STEPHENS COUNTY

Wirt Franklin Pet. Corp.'s No. 1 McPhail, NW SE Sec. 1-2s-7w .....Rig.
Smythe et al's No. 1 Johnson, NE cor. Sec. 30-2-8w ....Shut down 2,476-87 ft.

TILLMAN COUNTY

Allen Bros.' No. 1 Howell, SW NE Sec. 13-1-17w .....Drlg. 775 ft.
Nance et al's No. 1 Massie, NE NW Sec. 36-1S-6w .....Location.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-16w .....Shut down 2,535 ft.

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

(Continued from Page 52)

ELLIS COUNTY

Central Commercial Oil Co.'s No. 1 Helms, SE cor. NE Sec. 2-12-20w .....Location.
Phillips Pet. Co.'s No. 1 Clinton, SE NW Sec. 5-12-17w..Rig.
Streeter & Stearns' No. 1 Leiker, SW NE Sec. 26-13-20w..Shut down 1,290 ft.
Byrene et al's No. 1 Fisher, NW SE Sec. 4-11-20w .....Shut down 1,000 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w .....Fishing 2,555 ft.

ELLSWORTH COUNTY

Tatlock et al's No. 1 Sackem, C SW SE Sec. 25-17-9w ..Drlg. 3,015 ft.

FORD COUNTY

McNabb et al's No. 1 Fowler, C SE Sec. 26-27-22w .....Shut down 400 ft.
Swain et al's No. 1 Kenthorne, C NW Sec. 21-25-24w ....Drlg. 840 ft.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w..Shut down 4,340 ft.
Naylor et al's No. 1 St. John, NW SE SE Sec. 27-8-25w..Rig.

GREENWOOD COUNTY

Ward & McGinnis' No. 1 Henley, SW NE Sec. 23-25-9 ..Shut down 1,800 ft.
F. Konkay et al's No. 1 Rock, NW NE NE Sec. 7-27-12 ..Drlg. 985 ft.

HARPER COUNTY

Beeler et al's No. 1 Bear, C NE Sec. 21-31-6w .....Drlg. 1,830 ft.

HARVEY COUNTY

Superior's No. 1 Regier, SE NW Sec. 11-22-3w .....Drlg. 3,325 ft.
Liggett et al's No. 1 Regier, C SE NW SE Sec. 2-23-3w..Drlg. 3,365 ft.
E. W. Marland, Inc.'s No. 1 Neiman, C NE SE NE Sec. 8-24-2 .....Drlg. 3,375 ft.
Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w .....Shut down 3,360 ft.

HODGEMAN COUNTY

Phillips Pet.'s No. 1 Hausman, NW NE Sec. 30-22-22w..Drlg. 4,895 ft.

JEFFERSON COUNTY

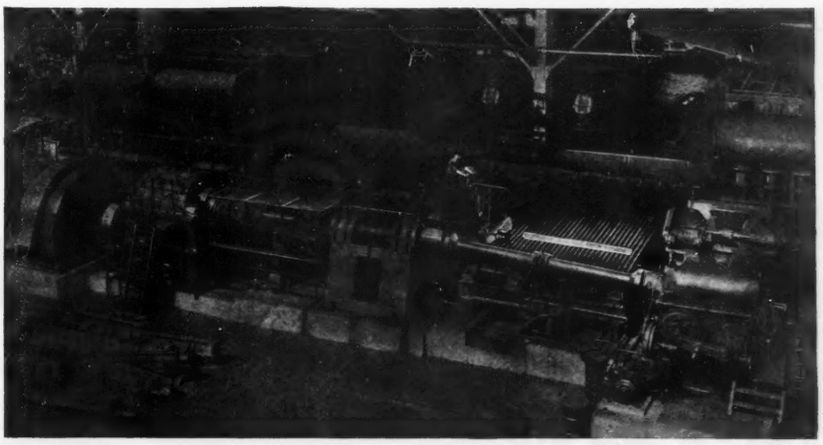
Wichita Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 .....Rigged up and shut down.

KINGMAN COUNTY

D. P. Fleeger's No. 1 Ashcraft, SE SW NE Sec. 16-28-7w .....Wilcox 4,343 ft.; water; drlg. 4,525 ft.
White Eagle's No. 1 Lorenz, C NE SW SE Sec. 25-27-5w..Shut down 4,128 ft.

LANE COUNTY

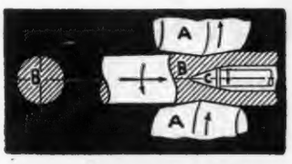
Robinson's No. 1 Dickerson, Sec. 11-18-27w .....Abandoned 2,625 ft.



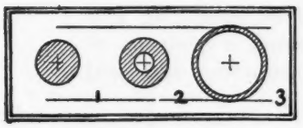
Pictured above is the first piercer in the J & L No. 2 Seamless Tube Mill at the Aliquippa, Pa., Works. One of the solid round billets, white hot, from which J & L Seamless Pipe is made, may be seen rolling down the skids, to enter the machinery in the right foreground, to be converted into tubular form. Compare the size of this powerful machinery with the operator, at his controls, in the center of the picture.

Right from the Start

J & L Strives for Seamless of Uniform Wall Thickness

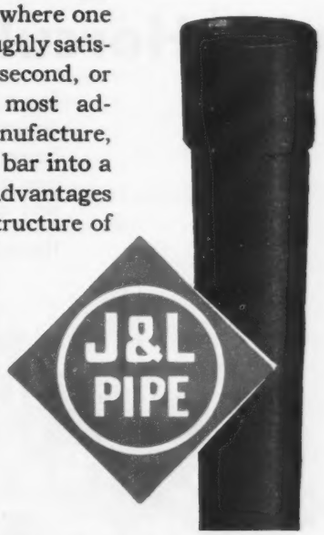


Sketch shows in cut-a-way view, the operation of the first piercer. The rolls, "A," carry the solid round billet, "B," over the piercing point, "C."



Development of cross section in the manufacture of J & L Seamless: 1. Before piercing; 2. After first piercing; 3. After second piercing.

IN producing all sizes of Seamless Pipe, except the smaller tubing where one piercing operation is thoroughly satisfactory, J & L employs also a second, or expanding, piercer. By this most advanced method of seamless manufacture, J & L converts the solid round bar into a tube gradually and easily. Advantages are, absence of strains in the structure of the steel and production of a tube of relatively uniform wall thickness right at the start. Together, these results make for uniform strength and dependability in the finished J & L Seamless when it goes into service in the field.



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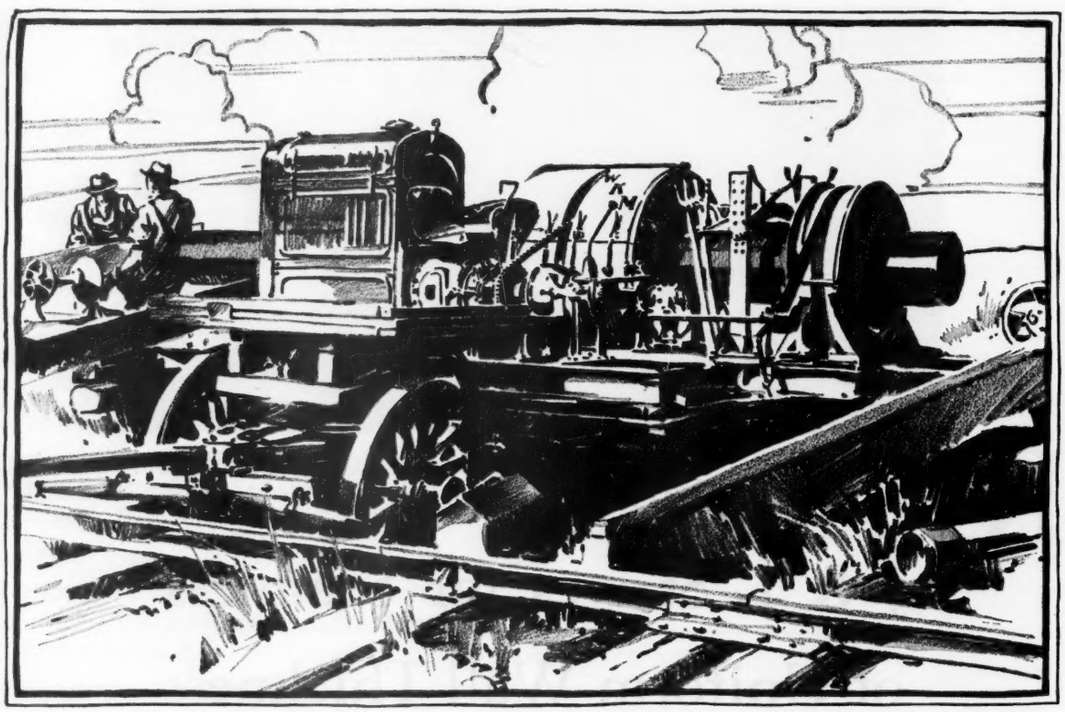
Manufacturers of Seamless and Welded Casing, Tubing, Drill Pipe and Line Pipe, and Welded Steam, Gas and Water Pipe in both Black and Galvanized.

Also makers of Bars, Shapes and Plates, Reinforcing Bars, Cold Finished Steel, Junior Beams, Steel Piling, Fabricated Structural Work, Steel Barges, Wire Products and Tin Mill Products.

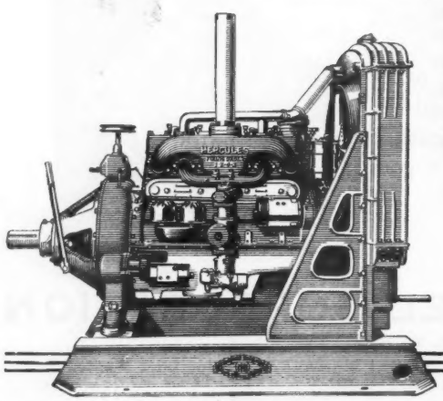
JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA



Painting Galveston's Gas Mains with Hercules Powered Equipment

The miles of pipe that went into the Galveston Gas Company's new natural gas system were prepared for installation by a Hercules Powered W-K-M Pipe Painting Machine. All of the pipe was descaled—then given a priming coat. The combined operation was accomplished with typical Hercules speed and efficiency.

Hercules Engines and Power Units are at their best on heavy-duty oil-field jobs. Powerful, sturdy and ever-reliable, they operate steadily under peak loads on many different types of oil producing and pipe-line equipment. Requiring a minimum of attention, they keep up production and hold down expenses.



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Hercules Power Units and parts are also carried by the Norvell-Wilder Supply Company of Beaumont, Texas; Houston, Texas; Fort Worth, Texas and Shreveport, Louisiana.

HERCULES ENGINES

LYON COUNTY

Sheedy et al's No. 1 Evers, C NE SE NE Sec. 4-21-10 ..Rig.
F. A. Bailiere's No. 1 McKee, SW NE Sec. 32-21-11 .....Abandoned 2,068 ft.
Sheedy et al's No. 1 Reese, SW SE Sec. 16-20-10 .....Shut down 1,200 ft.

MARION COUNTY

Empire O. & R. Co.'s No. 1 Black, C NE NW SW Sec. 27-19-2 .....Drlg. 2,552 ft.
Marshall et al's No. 1 Higgins, NE cor. Sec. 33-19-5 ....Rig.

McPHERSON COUNTY

Galt Brown et al's No. 1 Zeitlow, C NE SE SE Sec. 7-17-1w .....Drlg. 1,300 ft.
Dixie Oil Co.'s No. 1 Johnson, SW cor. Sec. 20-17-3w ....Drlg. 2,724 ft.
McCulloch Oil Co.'s No. 1 Cornelius, SW cor. Sec. 7-21-4..Drlg. 3,575 ft.
Kansas Oil Co.'s No. 1 Otto, SW NW Sec. 21-20-1w .....Chat 2,935-49 ft.; drlg. 3,480 ft.
Milmac's No. 1 Decker, NW cor. Sec. 11-20-3w .....Shut down 1,472 ft.
Transcontinental Oil Co.'s No. 1 Algers, NE SW Sec. 1-15-5w .....Underreaming 6-in. csg. 4,012 ft.; shut down.

MORTON COUNTY

Mangle et al's No. 1 Youngren, C SE NW Sec. 24-32-43..Spudded; shut down.

MORRIS COUNTY

Urschell et al's No. 1 Scott, NE SW Sec. 6-16-6 .....Shut down 1,600 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, C SW Sec. 17-4-21w .....Rig.

OSBORNE COUNTY

Phillips Pet. Co.'s No. 1 Grieve, NW SE NE Sec. 6-7-12w..Drlg. 4,320 ft.

PAWNEE COUNTY

Prairie O. & G. Co.'s No. 1 Black, SW NE NE Sec. 11-20-18w .....Drlg. 3,700 ft.

PRATT COUNTY

O'Haver & Jones' No. 1 Garacke, C NE SW Sec. 7-26-14w .....Drlg. 3,860 ft.
Wilcox O. & G. Co.'s No. 1 Bappin, SW NW Sec. 7-26-15w .....Underreaming 8-in. csg. 2,785 ft.

RENO COUNTY

M. M. Valerius' No. 1 Stevens, C NE SE NE Sec. 6-26-7w .....Rig on ground.
Wilcox O. & G. Co.'s No. 1 McPheeters, SW NW Sec. 22-26-8w .....Drlg. 3,655 ft.
Witt's No. 1 Olsen, C SE NW Sec. 14-22-6w .....Drlg. 3,025 ft.
Skelly Oil Co.'s No. 1 Birkett, NE SW Sec. 30-24-7w ....Wilcox sand 4,172-96 ft.; water; shut down.

RICE COUNTY

Tatlock et al's No. 1 Ploog, C SW SE Sec. 33-18-9w ....Rig.
Miller & Detrick's No. 1 Shumway, C SW Sec. 2-20-9w..Shut down 3,636 ft.; water.
Burgher's No. 1 Fair, C SE NE NE Sec. 14-21-10w ....Drlg. 2,325 ft.
Derby Oil Co.'s No. 1 Johnson, C NW NE SE Sec. 24-20-6w .....Drlg. 3,125 ft.
Danciger et al's No. 1 Bell, C SW Sec. 16-19-8w .....Drlg. 2,900 ft.
McCullough et al's No. 1 Williams, C NE Sec. 35-20-8w..Rig.

RILEY COUNTY

Grey et al's No. 1 Smith, NE SE Sec. 30-6-6 .....Shut down 1,970 ft.
Derby & Shaw's No. 1 Lindstrom, NE cor. Sec. 32-7-5e..Shut down 2,245 ft.

ROOKS COUNTY

A. H. Kruger's No. 1 Steis, NW SE SW, Sec. 12-9-16w..Shut down 570 ft.

RUSH COUNTY

Danciger Oil & Refining Co.'s No. 1 Nave, NW cor. Sec. 26-17-17w .....Drlg. 3,606 ft.
Milmac's No. 1 Mohr, C NW Sec. 11-18-16w .....Drlg. 1,235 ft.

SALINE COUNTY

Austin et al's No. 1 Olsen, NW SW SE Sec. 10-15-4w ...Shut down 3,690 ft.

SEDGWICK COUNTY

Tavender et al's No. 1 McLean, SE SW SE Sec. 23-26-1w .....Drlg. 150 ft.
Marland and Amerada's No. 1 Sensorth, NW cor. Sec. 25-28-4w .....Water 4,305-09 ft.; abandoned.
McCullough Oil Co.'s No. 1 Buckles, NW cor. SE Sec. 3-28-1w .....Fishing 1,115 ft.

SHAWNEE COUNTY

Jenkins & Scott's No. 1 Sherman, NW NE Sec. 28-10-15 .....Shut down 985 ft.
Jenkins & Scott's No. 1 Haden, NE SE Sec. 8-12-14 ....Shut down 750 ft.

SHERIDAN COUNTY

Mandalin O. & G. Co.'s No. 1 Unknown, C SE SW SW Sec. 27-7-26w .....Spudded; shut down.

STAFFORD COUNTY

Gibson's No. 1 Mueller, C SW Sec. 11-23-14w .....Drlg. 3,400 ft.

STEVENS COUNTY

Argus Oil Co.'s No. 1 Armstrong, CNL S half NW Sec. 16-34-39w .....Rig on ground.
Argus Oil Co.'s No. 1 Parker, C SW Sec. 19-34-36w ....Location.
Argus Oil Co.'s No. 1 Smith, C SW Sec. 13-33-37w .....Location.
McNabb and others' No. 1 Ramey, C SW Sec. 1-33-38w..Rig.
Argus Gas Co.'s No. 1 Hobbe, C SE Sec. 17-32-37w .....Rigging up standard tools 2,409 ft.
W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16-34-38w .....Shut down 1,600 ft.

SMITH COUNTY

Phillips Pet.'s No. 1 Clydesdale, SE NW Sec. 23-5-14w ..Casing trouble 4,081 ft.

SUMNER COUNTY

Hatfield's No. 1 Dauber, NE cor. Sec. 18-30-1w .....Shut down 50 ft.
Kingwood Oil Co.'s No. 1 Stayton, C NE Sec. 18-31-2w ..Chat 3,845-70 ft.; show oil; drlg. 4,005 ft.
Slick et al's No. 1 Peasel, NW cor. Sec. 33-31-1w .....Chat 3,651-59 ft.; averaged 87 bbls. daily last week.
Lario O. & G. Co.'s No. 1 Osborne, NE SE Sec. 21-30-1w .....Chat 3,590-3,605 ft.; water; shut down 3,680 ft.
E. K. Carey and Laredo Oil Co.'s No. 1 Welsch, SW SE Sec. 9-34-1e .....Drlg. 3,751 ft.
Davidson et al's No. 1 Strickland, SW cor. SE Sec. 12-35-1w .....Rig.

TREGO COUNTY

Dixie and Amerada's No. 1 Reitmayer, C NE NE Sec. 19-14-21w .....Drlg. 2,185 ft.
Prairie Oil & Gas Co.'s No. 1 Kutina, C NE SW NE Sec. 29-15-21w .....Drlg. 4,135 ft.
Phillips Pet. Co.'s No. 1 Spitz, SE cor. Sec. 24-12-25w ...Estimated 15 bbls. 4,160-65 ft.; drlg. 4,515 ft.
Day et al's No. 1 Gugler, SW NE NE Sec. 36-12-21w ....Shut down 50 ft.
Day et al's No. 1 Unknown, NE NW SW Sec. 2-11-21w ..Shut down 3,415 ft.

WASHINGTON COUNTY

McCool & Vincent's No. 1 Linn, NW cor. NE Sec. 27-4-3..Shut down 3,100 ft.

WOODSON COUNTY

Oko Oil Co.'s No. 1 Hougland, SW NE NE Sec. 2-24-14 ..Spudding.

WILDCAT OPERATIONS IN NEBRASKA

FRANKLIN COUNTY

U. R. Drlg. Co.'s No. 1 Brunkie (twin well), C NW SW NE Sec. 2-3n-13w .....Rig.

CHASE COUNTY

Chase Pet. Co.'s No. 1 Ingold, C NE Sec. 24-6n-38w .....U.R. 5-in. csg.; T.D. 4,265 ft.

FURNAS COUNTY

Southwestern Pet. Corp. of Nebraska's No. 1 Montague, SE SW SW Sec. 28-1n-22w .....Shut down 1,750 ft.
Graham Bros.' No. 1 Edwards, NW SW Sec. 13-2n-22w ..Shut down 3,250 ft.

RICHARDSON COUNTY

Norton et al's No. 1 Hauser, NE cor. Sec. 26-1-14 .....Location.

ROCK COUNTY

North Central Dev. & Drlg. Co.'s No. 1 Leonard, SE cor. NE Sec. 14-32-18w .....Drlg. 900 ft.

WEBSTER COUNTY

Mid-Kansas Exploration Co.'s No. 1 Platt, C SE one-half Sec. 3-1n-11w .....Shut down 555 ft.

WORLD NEWS STORIES OF THE KOHLER ELECTRIC PLANT—NO. 12

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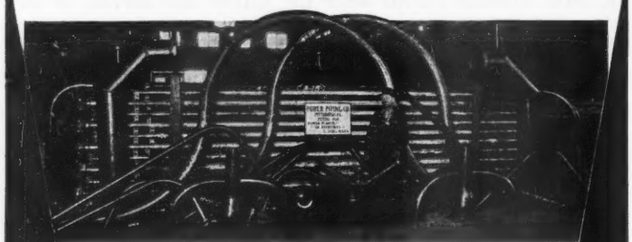

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FOREIGN OIL MEN DISPLAY LIVELY INTEREST IN PACIFIC COAST SHOW

LOS ANGELES, Calif., Feb. 15.—That the first Pacific Coast oil exposition to be held in the Shrine Auditorium, Los Angeles, March 16 to 23, will be international in character is shown by the announcement that representatives of many foreign fields will attend. Several parties of Russian engineers are already in California and others are known to be on their way. Engineers from South American oil producing countries will be at the exposition, as well as men from Rumania and the Dutch East Indies.

Because of the large investments now being made by the Russian government in modernizing its production and refining equipment, particular interest is being taken in the groups of Soviet engineers who periodically visit this country.

The mission of these technical men is to investigate and report back to their higher officials, possibly with recommendations that certain orders should be placed. In many instances they have no authority to make purchases and the orders that follow as a result of their contacts with American manufacturers are not received here for six months or more. Their special object is to watch the trend of design and construction in oil industry equipment and supplies, and to learn of new tools and methods of procedure that may lend to greater efficiency, but that have not yet been adopted as general practice.

Russian Engineers Now Here

Russian engineers now in this country and who will visit the exposition include N. Anissimov, N. D. Elin, N. I. Nurenberg, C. A. Gander, L. A. Ladygin, V. N. Pisako, V. M. Korobovkin, M. I. Alexeev, P. A. Berejanoff, and George S. Tomaschevsky.

P. A. Berejanoff is chief engineer, department of drilling and production in the Technical Bureau, U. S. S. R. He has been in the United States for about six weeks and in California for about a month. George S. Tomaschevsky represents the Amtorg and acts as interpreter for the delegates.

B. P. Boots, production engineer, De Bataafsche Petroleum Maatschappy, technical department, Royal Dutch-Shell, is also in this country and will attend the technical meetings of the exposition. He is particularly interested in the subjects to be discussed at the A.P.I. conference to be held at the exposition on March 20 and 21. He is a graduate of Delft University and has had field experience in Borneo and Tarakan Island, as well as in many of the other fields in the Dutch East Indies. His assigned work is the study of equipment and procedure connected with air and gas lift and the pressure drive.

Because of the presence of so many engineers at the exposition, oil company officials, equipment manufacturers and officers of the American Petroleum Institute are combining in an effort to prepare exhibits that will have both educational and practical value. They say that the conferences held at the Tulsa expositions have resulted in many notable improvements in methods of procedure and in equipment, and they are confident that equally good results will follow contacts between the makers and users of tools and supplies at the Los Angeles exposition.

Tulsa Oil Show Proved Worth

The support given to the exposition by oil company executives and by equipment manufacturers is largely due to the fact that the Tulsa exposition definitely demonstrated the value of combining conferences of oil men with attendance at trade exhibitions. These men have watched the development of this movement since the first international congress and exposition was held in Tulsa in 1923.

They have seen the changes that have taken place in the congress and the exposition on the one hand and in the equipment and the men using it on the other hand. The first expositions were organized by community boosters and were designed to attract the general public by side shows and circus stunts. The first congress was notable for its oratory rather than for its practical discussion of urgent problems. Equipment in those early days was lighter and was designed for comparatively shallow drilling. The field crews were generally unskilled or only semiskilled.

Conditions today are very different and are becoming increasingly different. Because of present day deep drilling practices, field men must handle far heavier and more complicated machinery. With the increased skill and technical knowledge required of them have come a greater interest in the subjects discussed at the conferences and a greater ability to take part in the discussions that follow the reading of the papers.

These changed conditions have emphasized the value of the combined exposition and conference. It offers contacts that are recognized as valuable by both manufacturers and oil company executives. Company officials want their employes to take advantage of the opportunities for practical training offered by the exposition, and manufacturers want to gain the attention of the actual users of their equipment. Mutual interests have, therefore, led all sections of the oil industry to give generous support to the first Pacific Coast oil exposition.

CENTRAL WEST FIELDS

(Continued from Page 84)

ship. In the same township, the Ohio Fuel Gas Co. made a location for No. 1-4,997 on the E. A. Gladden, and also for No. 2-5,027 on the A. W. Embree farm, both in Section 16. Same company made a location for No. 1-5,018 on the S. B. Zumbrow, Fractional Section 12. Marion Township, Huffman and others are drilling No. 6 John Huffman farm, Section 29, same township. Malta Oil & Gas Co. is drilling No. 61 John W. Davis, Section 24, Union Township. The Kemrow Co. abandoned No. 12 location on the Edward Parker farm, Lot 4, Marion Township.

In Licking County, Hanover Township, the Pure Oil Co.'s No. 5 R. L. Shoemaker, Section 1, produced an initial of 40 bbls. from 2,906-56 feet.

In Muskingum County, Clay Township, William Kline and others' No. 2 on the Ramsbottom Pottery tract, Section 3, is reported with an initial production of 155 bbls. and the Pure Oil Co.'s No. 4 Lloyd McKee, Section 5, Jackson Township, same county, showed an initial of 150 bbls. from 3,003-45 feet.

INDIANA

Completions were few in the Indiana fields, owing to bad weather conditions, with high waters in the southern and southwestern portions of the State where the bulk of the work is under way. In the old Trenton Rock area in the northeastern area in Jay County, the Amber Producing Co. abandoned Nos. 30, 33 and 34 on the L. Grissell farm, Section 21, Penn Township, in the one-time rich Camden-Pennville Pool. Pennville Oil & Gas Co. also abandoned Nos. 6, 7, 8 and 11 on the G. F. Gemmill farm, Section 27, same township, while in Knox Township, same county, the Turkey Creek Oil Co. pulled out old Nos. 1, 2, 3, 4 and 5 on the L. Horn farm, Section 4. Only two wells are now under way in the old Trenton Rock area, both in Adams County.

In the extreme southern part of Indiana, the operators are up against numerous dry holes in the hunt for commercial production, as three dusters are reported from one county. E. M. Treat Co. has abandoned the test on the Haynes farm in Ohio Township, Spencer County, at a total depth of 1,702 feet. Williams and others' test on the Irvin Mounier farm, 2 miles north of Troy, Huff Township, same county, and approximately 2 miles north of the producing wells on the Ray farm, is a duster at 1,135 feet, and another worthless hole is Eckley & Bettinger's test on the Earnest Bauer

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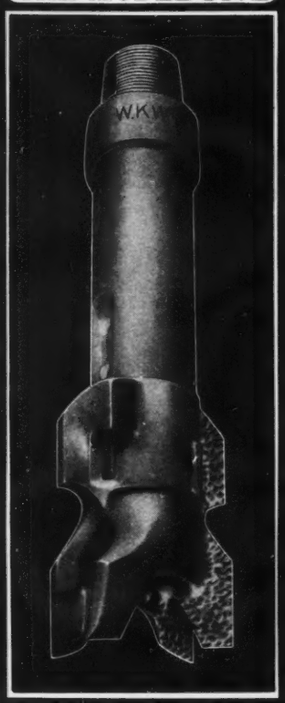

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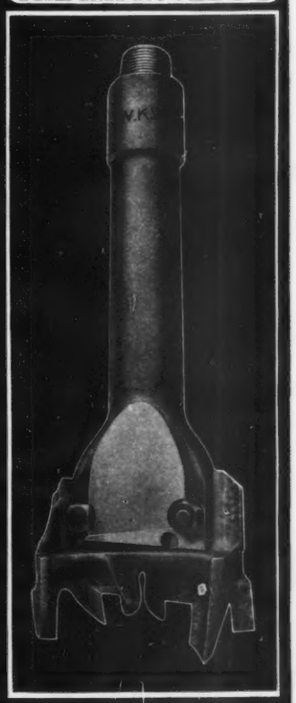

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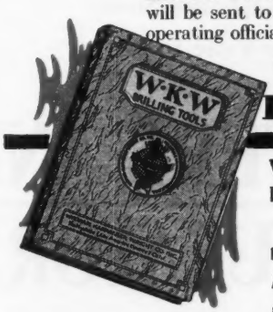

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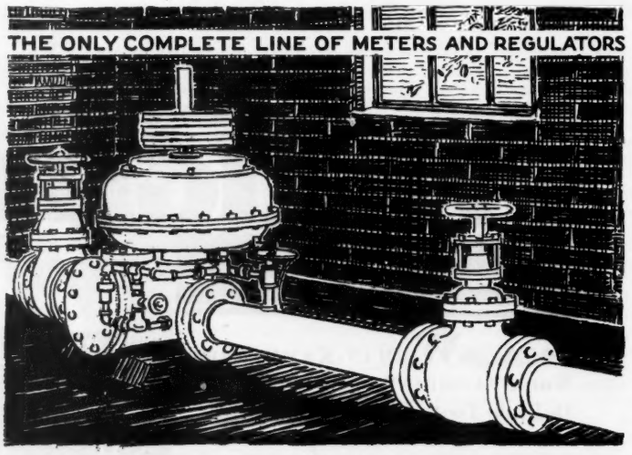

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farm, near the town of Boston, in Harrison Township, same county, which was dry at a total depth of 895 feet, there being only a light oil showing at 707 feet, after which salt water was encountered.

Conyers, Roetzel and Bugg's test on the Frank Delaisse farm, Section 25, Clark Township, Perry County, is reported showing for 250,000 feet of gas in the Barlow sand at a depth of 415 feet. No. 2 is being started on the same farm. Seitz and others are working on an unknown lease in Section 16, Tobin Township, same county.

Much interest is shown in the test drilling by the Petroleum Exploration Co. and the Ohio Oil Co. on the Deckard farm, in Polk Township, Monroe County, which will test the Trenton lime formation. The present well drilling by the two companies on the Young heirs farm, which is about 2,000 feet from the company's gas well on the Mary E. Shirley farm, developed nice gas in the upper pay sands around 1,000 feet. The Young well started a 16-inch hole and found a nice gas volume, but will continue to the Trenton.

Indiana Oil and Gas News

Compiled by Paul F. Simpson, state gas superintendent, Department of Conservation, Division of Geology, Indianapolis, Ind.

Allen County—A gas well completed some time ago at the southwest edge of Woodburn is reported as having an initial of 68,000 feet.

Adams County—Rosenthal & Fike are drilling a second well on the Bollenbacher heirs farm in Section 34, Blue Creek Township. Scoofakes & Heflin are drilling the Clark Stanley No. 5 well in the same section.

Clay County—The Siosi Oil Corp. has abandoned its deep test south of Staunton at 3,100 feet. It passed through the Trenton without finding any pay horizon. The rig is to be moved to another location near West Terre Haute.

Gibson County — Shell Petroleum Corp.'s No. 3 George Allen is abandoned temporarily at 1,435 feet because of water. It had produced some oil. The Indiana Oil & Gas Corp. was down 915 feet on the Ben Buck farm in Section 10, Barton Township. Same company is drilling on the Perry Colvin lease in Section 6, Washington Township, and on the William Ireland lease in Section 32, Center Township. Its well on the L. W. Gudgell farm, in Section 25, Columbia Township, is down for repairs at 2,460 feet. Same company has moved the rig from the Wesley Ice test in Washington Township, but may drill it deeper. It has plugged back at 1,925 feet in No. 2 Mitchell, Section 33, Center Township. Rigging is up for No. 3 on the same farm.

Jay County—The Amber Oil Producing Co. abandoned the L. Grissell Nos. 30, 33, 34, in Section 21, Penn Township. The Pennville Oil & Gas Co. abandoned the G. F. Gemmill Nos. 6, 7, 8, 11, in Section 27. The Turkey Creek Oil Co. abandoned the L. Horn Nos. 1, 2, 3, 4 and 5 in Section 4, Knox Township.

Kosciusko County—Leases are being taken in Turkey Creek Township and it is rumored a test will be started.

Lake County—The Dome Oil Co. is down about 1,600 feet in its wildcat near Highland, and has passed through the Trenton formation.

Monroe County—The Petroleum Exploration Co. is starting a test in Section 3, Salt Creek Township, east of Bloomington. It is also drilling in Polk Township a short distance north of its well on the Howell farm. It is drilling toward the Trenton in its second test near Unionville, after having cased off a very heavy flow of gas in the Corniferous.

Perry County—The Ohio Oil Co. is reported having leased up 8,000 acres near Bristow, and may drill in Section 26. Theodore Seitz is drilling in Section 15, Tobin Township. The Frank L. Delaise well, drilled by Conyers, Roetzel & Bugg, in Section 25, Clark Township, made 250,000 feet from the Barlow sand at 415 feet. A second well is starting 1,400 feet to the west, which will test deeper sand.

Pike County—The Murphy Oil Co. abandoned No. 3 Mary E. Coleman in Section 11, Patoka Township. Harry Rischer and others are drilling on the Frank DeMott farm in Section 7, Jefferson Township. William Bell and others are down 625 feet in a second well on the Berkley Hill lease in Location 31, Madison Township. Same company found a 10-bbl. well at 1,314 feet in No. 2 Fred Lindy, Section 31, Clay Township. Rischer and others are down 400 feet in No. 2 Charles McAtee, Location 146, Clay Township. Dr. C. C. Taliaferro's No. 2 Mary McAtee in Section 12, Clay Township, had an initial of 500,000 feet. The rigging is up for a third well on the same farm. C. N. Savage and others are drilling No. 2 Byron Preston in Section 30, Washington Township. The Illpava Oil Co. is down 415 feet on the N. Robesheid farm. O. L. Diver and others found oil at 1,365 feet in the Robert Walton well in Section 14, Logan Township.

Spencer County—Eckley & Bettinger plugged their test on the Ernest Bauer farm near New Boston in Harrison Township. A small quantity of oil was reported at 707 feet, water at 895, and the total depth was 901 feet. E. M. Treat & Co. abandoned their well on the Haynes farm in Ohio Township at 1,702 feet. Williams and others plugged their test on the Irvin Munier farm, 2 miles north of the Ray wells in Huff Township, at a depth of 1,135 feet. Several showings were reported. W. J. Brown is down 1,700 feet in No. 7 Arthur Ray for the Packard Oil Co.

Vigo County—A good part of the Siosi Field has been covered by flood waters from the Wabash River, causing all pumping and drilling operations to come practically to a standstill. Siosi's deep test, which stopped in the Trenton at 3,600 feet, is being plugged back to the new lower sand, which will be shot.

The area along the eastern edge of Monroe and Lawrence Counties, which has aroused interest because of oil and gas production being found in structures associated with the Mount Carmel fault, has recently been mapped under the direction of Dr. W. N. Logan, state geologist. The map is blue, printed in two sections on the scale of 1 mile to the inch. It is accompanied by a short report on the fault by Doctor Logan.

HELP SOUGHT IN FIGHT ON TAX FREE GASOLINE

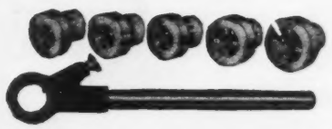
AUSTIN, Tex., Feb. 15.—The Texas gasoline inspection department is seeking the co-operation of the larger refining units in an effort to eliminate "tax free" gasoline. A survey of consumption, particularly in the sparsely settled parts of the State, shows that large volumes of kerosene and natural gasoline blends are being sold as motor fuel on which no tax is paid.

It is proposed now to establish a tax on all finished petroleum products having a closed cup flash of 110° F. and used as a motor fuel. This has been suggested as an easy means of defining "gasoline" and while some kerosene and naphthas will fall within the tax range, the amount of this tax will be refunded by the State to the consumer if he shows he has used it in some other manner than as motor fuel.

The 110° F. closed cup flashpoint was suggested for it was believed that an oil with a higher flash could not be satisfactorily used in the present motors. Further hearings are being arranged.

FINNISH SALES ORGANIZATION

The O. Y. Nafta A. B., has been organized in Finland for the sale of Russian petroleum products. Its headquarters will be in Helsingfors. The organizers and majority stockholders are K. V. Vuokoski, former deputy in the Finnish Diet; B. M. Schwartz of the local Russian Trade Delegation and Deputy Dr. Johan Helo. The distribution center will be the city of Kotka in southern Finland. Negotiations are being carried on with the city authorities for the construction there of the necessary tank facilities.



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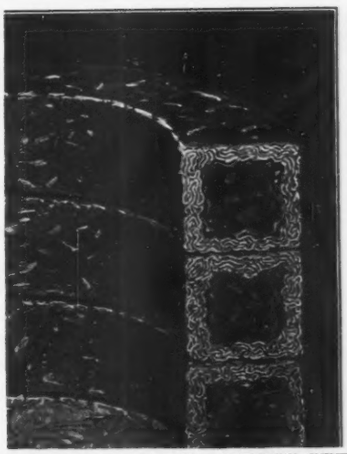

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NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

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Gray County

Gulf Production Co.'s No. 1 J. B. Bowers, 967 feet north and east of the SW cor. of the SE of Section 63, Block B-2, H.&G.N. Mid-Continent Petroleum Corp.'s No. 1 M. L. Langham, 330 feet north and east of the SW cor. of the west 231.5 acres of the north 310.5 acres of Section 1, Block B-2, H.&G.N. Prairie Oil & Gas Co.'s No. 2 M. L. Langham, 330 feet south and east of the NW cor. of the west 230.5 acres of the south 310.5 acres of Section 1, Block B-2, H.&G.N.

Hutchinson County

Alexander and others' No. 1 Johnson Brothers, 330 feet south and 1,709 feet west of the most easterly NE cor. of the Mrs. E. T. Tumlinson Survey No. 1. Continental Oil Co.'s No. 1 Johnson Brothers-E, 330 feet north and east of the SW cor. of the SE of Section 5, Block 1, B.&B. Danciger Oil & Refining Co.'s No. 1 R. F. Cheatham, 330 feet south and west of the NE cor. of the SW of the SE of Section 38, Block Y. Dixon Creek Oil Co.'s No. 1 R. F. Cheatham, 330 feet north and 990 feet west of the SE cor. of the N half of the SE of Section 38, Block Y. Phillips Petroleum Co.'s No. 2 R. F. Cheatham, 330 feet south and east of the NW cor. of the SE of the SE of Section 38, Block Y. Same company's No. 1 Johnson Brothers-Juanita, 330 feet north and west of the SE cor. of the W half of Section 5, Block 1, B.&B. Same company's No. 1 Johnson Brothers-Trammel, 930 feet north and 330 feet west of the SE cor. of the W half of the NW of Section 38, Block Y. Spurlock and others' No. 1-A W. S. Christian, 440 feet south and 300 feet west of the NE cor. of the SE of the SE of Section 33, Block Y. The Texas Company's No. 5 J. L. Moore, 330 feet north and west of the SE cor. of the SW of Section 125, Block 4, I.&G.N.

Wheeler County

Lone Star Gas Co.'s No. 3 C. A. Linkey, 330 feet south and west of the NE cor. of Section 106, Block 23, H.& G.N. Murchison & Fain's No. 1-A W. L. Cooper, 330 feet north and 380 feet east of the SW cor. of the NW of Section 80, Block 23, H.&G.N. Wischkamper and others' No. 2 M. Brown, at the C of the SE of the NE of Section 53, Block 23, H.&G.N.

NORTH CENTRAL AND WEST TEXAS

Andrews County

Deep Rock Oil Co. and others' No. 1 W. J. Mathis, 990 feet north and east of the SW cor. of Section 4, Block A-46, Public School Land.

Archer County

Magnolia Petroleum Co.'s No. 7 O. Deitrich, 558 feet south and 150 feet west of the NE cor. of Section 4, B.B. B.&C., A-1,700, being 29 feet south and 150 feet west of the most easterly NE cor. of their 22.8-acre lease.

Brown County

Arcadia Refining Co.'s No. 1 J. J. Andrews, 150 feet north and west of the SE cor. of the C. B. Banister Survey No. 626. Arcadia Refining Co.'s No. 1 C. H. and A. J. Reaves, 150 feet south and 1,556 feet east of the NW cor. of the C. H. and A. J. Reaves 62-acre tract out of the J. A. Wright Survey. H. A. Beasley and others' No. 1 B. S. Boysen, 2,766 feet south and 750 feet west of the NE cor. of the H. Pressler Survey, A-2,041.

Callahan County

Mid-Tex Oil & Gas Co.'s No. 1 T. Windham, Section 371, 660 feet north and 200 feet east of the SW cor. of the NE of the G. W. Denton Survey No. 371.

Coleman County

Continental Oil Co. and others' No. 15 M. T. Overall, 200 feet north and 1,550 feet west of the SE cor. of the J. H. Barkly Survey No. 701.

Comanche County

Corvette Oil Corp.'s No. 3 L. Poteet, 250 feet north and east of the SW cor. of the NW of the NW of Section 45, Deaf & Dumb Asylum Land.

Eastland County

Lone Star Gas Co.'s No. 5 W. H. Grove, 1,346 feet south and 1,347 feet east of the NW cor. of Section 487, S.P. R.R. Rover Drilling Co.'s No. 1 B. F. Chastain and others, 370 feet north and 297 feet east of the SW cor. of Section 52, Block 4, H.&T.C.

Glasscock County

Amerada Petroleum Corp.'s No. 2 R. C. Coffee, 1,650 feet south and 2,310 feet east of the NW cor. of Section 22, Block 33, T-2-S, T.&P.

Howard County

Continental Oil Co.'s No. 7 O. Chalk-C, 1,990 feet south and 2,440 feet west of the NE cor. of Section 140, Block 29, W.&N.W.R.R.

Jack County

Buttram Petroleum Co.'s No. 2 C. K. Cullers (Graham estate) "C," 232 feet south and 300 feet west of the SW cor. of Section 5, S.P.R.R., A-550, and located in the S. M. Holderness Survey, A-1,532.

Parker County

Sanger Oil & Gas Co.'s No. 1 J. Moran, 3,100 feet north and 3,000 feet west of the SE cor. of the W. T. Malone Survey.

Pecos County

Amerada Petroleum Corp.'s No. 1 University-B, 990 feet north and 1,650 feet east of the SW cor. of Section 32, Block 16, University Land. Atlantic Oil Producing Co.'s No. 1 Shearer, 330 feet southeast of the northwest line and 330 feet northeast of the southwest line of Section 107, Block 10, H.&G.N. Shell Petroleum Corp.'s No. 5 Smith-D, 990 feet north and west of the SE cor. of Section 24, Block 194, G.C.&S.F. Same corporation's No. 1 University-D, 1,650 feet north and 990 feet east of the SW cor. of Section 32, Block 16, University Land.

Shackelford County

Texas Consolidated Oil Co.'s No. 2 W. D. Reynolds, 150 feet north and west of the SE cor. of Section 24, Block 11, T.&P. Same company's No. 3 W. D. Reynolds, 2,490 feet north and 1,170 feet west of the SE cor. of Section 23, Block 11, T.&P. Vacuum Oil Co.'s No. 7 J. B. Matthews-C, 475 feet north and west of the SE cor. of the NW of the SW of Section 29, Block 10, E.T.R.R.

Ward County

Southern Crude Oil Purchasing Co.'s No. 1 Charles Harris, 1,458 feet south and 1,406 feet west of the NE cor. of Section 30, Block B-19, School Land.

Wichita County

Kisk Oil Co.'s No. 2 J. L. and T. J. Waggoner, 150 feet north and 189 feet east of the SW cor. of the east 5 acres of the west 25 acres of the south 40 acres of the west 160 acres of the M. A. Willis Survey, A-547. The Texas Company's No. 375 Waggoner, 1,215 feet south and 330 feet east of the NW cor. of Section 13, H.T.&B., A-137.

Winkler County

Shell Petroleum Corp. and The Texas Company's No. 1 E. W. Cowden-B, 660 feet north and east of the SW cor. of Section 39, Block B-5, School Land.

Young County

Bollin & Lindsey's No. 7 D. L. Wolf, 450 feet south and 150 feet west of the NE cor. of the north 30 acres of the E half of Section 165, T.E.&L. The Bonner Co.'s No. 5 J. W. Davis, 750 feet north and 150 feet west of the SE cor. of the west 60 acres of the S half of Section 1,395, T.E.&L., being 10 feet west of the Allday Oil Corp.'s No. 1 J. W. Davis. E. B. Lawson's No. 3 J. A. Leberman, 324 feet north and 300 feet east of the SW cor. of the south 40 acres of Section 151, T.E.&L. E. R. Riggs' No. 5 P. J. Ketter, 1,350 feet south and 1,340 feet east of the NW cor. of Section 150, T.E.&L. United Production Co.'s No. 2 J. A. Leberman, 80 feet north and 450 feet east of the SW cor. of the north 80 acres of the south 120 acres of Section 151, T.E.&L. C. Wainwright's No. 1 Mrs. M. Garvey, 150 feet north and east of the SW cor. of

(Continued on Page 188)

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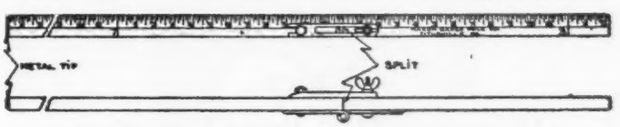

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HOPEFUL OF LOCATING SECOND TURNER VALLEY

By Victor Lauriston

CHATHAM, Ontario, Feb. 15.—Geological work has been exceptionally active in the foothills belt in the past year or more, impelled by the hope of locating a second Turner Valley Field. The foothills belt extends from the international boundary to the Arctic Circle, running east of and parallel to the Rocky Mountains. As it extends further north, it also trends to the west.

Some years ago in the early stages of its development campaign Imperial Oil, Ltd. tested a number of foothills structures. North of Calgary tests were drilled on the Pouce Coupe structure, west of Peace River, encountering a large gas flow but no oil; and on the Coalspur structure west of Edmonton, where two successive tests failed to develop either commercial oil or gas. In the extreme south, two tests, one at the time establishing a depth record for Canada, were drilled in the Pincher Creek section, and two or three were put down in the Willow Creek and Rice Creek areas west of Nanton.

Since then numerous new structures have been located by geologists and some are being actively tested. Geological investigation indicates the presence of a number of successive folds east of the Rocky Mountains. Naturally, activity is greatest on the folds which represent a potential extension of the Turner Valley, or lie parallel to that structure.

The Turner Valley Field lies south and a little west of Calgary. A parallel fold west of the northern part of the Turner Valley structure is the Waite Valley structure, where about eight tests are drilling. South of this, and a little south and west of the Turner Valley, is the New Black Diamond structure. Still further south is the Highwood-Sinclair structure. Faulted conditions have led to the shutting down of one New Black Diamond test and one on the Highwood structure; but active work is still being carried on by other companies particularly in the extensive Highwood area, which, like the Turner Valley, appears to be a double fold.

Northwest of the Highwood structure and some distance west of the New Black Diamond is the Rickert structure, where two tests are making slow headway. The Highwood structure in its larger sense may be said to extend south beyond Nanton. The area west of Nanton, already tested without success, is inactive at present; but further south some drilling is in prospect for the Watson and Maycroft areas. One test is still drilling in the Pincher Creek area; while on the British Columbia side of the provincial boundary the Flathead Valley is being tested by a number of companies.

In the opposite direction from the Turner Valley, a number of interesting wildcat tests are drilling or preparing to drill. North and a little east of the Turner Valley is the Calling Valley. North and considerably west of this is the Moose Mountain structure, with two tests drilling. West of Calgary, a structure has been mapped on the Sarcee Reserve, representing, apparently, one of the gentler outlying folds of the foothills, which may be tested next spring. West of the Moose Mountain area is the Herron structure where one test is now drilling.

Almost due west of Calgary is the Jumping Pound district, which has been twice unsuccessfully tested by Imperial Oil, Ltd. Further north and west is the Williams structure, still untested, and yet further north is the Morley Reserve area, where some actual drilling is being done. Almost due north of this is the Ghost River structure, and east of this the Wildcat Hills, both areas being tested at present. Further north is the Fallen Timber structure, and northwest of this again the Monarch district. There is another Monarch Field where drilling for gas has been carried on, in southern Alberta, east of the foothills; the Monarch area in the foothills derives its name from the now defunct Monarch Oil Co. which drilled a deep test there some 15 years ago. Continuing to the north and west are the Bearberry or Parker Creek, Olds and Brown Creek structures still untested.

In general these areas are thought to be similar to the Turner Valley Field, involving sharply tilted formations, steep structures and deep drilling with the crude naphtha horizon of the Madison limestone as an objective. Drilling has already, however, disclosed some differences. In the Highwood, New Black Diamond and Jumping Pound areas, faulting has been disclosed though drilling has not been sufficiently widespread to condemn the entire structures on this score. On the Morley Reserve, the Madison limestone has been drilled through in one instance, the drill passing into the Devonian lime, without duplicating the large commercial production of the Turner Valley; and on the Moose Dome, a subsidiary structure, drill actually started in the Madison and entered the Devonian at 550 feet. In these areas, or parts of them, the Madison is manifestly much nearer the surface than the Turner Valley. This claim is generally made for foothills structures still untested, but in a couple of instances has been upset by actual drilling.

FRED M. KIMBALL DEAD

Fred M. Kimball, advisory manager of the motor division of the industrial department of the General Electric Co., died February 5 in Lynn, Mass.

LEGAL

DEPARTMENT OF THE INTERIOR
WASHINGTON
Call for Bids

To purchase Government royalty oil from the SE¼ Sec. 2, and NW¼, Sec. 12, T. 22 S., R. 17 E., M.D.M., Kettleman Hills oil field, California.

Pursuant to the provisions of Section 26 of the act of Congress approved February 25, 1920 (41 Stat., 437), sealed proposals in duplicate will be received in the office of the Secretary of the Interior, Interior Department Building, Washington, D. C., on or before noon of March 1, 1930, from responsible bidders for the purchase, for a period beginning April 1, 1930, and ending June 30, 1931, of royalty oil accruing to the United States from two wells, one on the SE¼, Sec. 2, and one on the NW¼, Sec. 12, T. 22 S., R. 17 E., M.DM., in the Kettleman Hills oil field, California, operated respectively by the Milham Exploration Company and the Mariand Oil Company of California. The approximate quality of the oil to be sold is indicated by the following: Gravity, about 60 degrees A.P.I.; 89 per cent gasoline stock (437° F.); 8 per cent kerosene and fuel oil; 3 per cent distillation loss. The Government's royalty oil amounts to approximately 500 barrels a day and will probably decrease. It is provided under an agreement approved by the Secretary of the Interior on November 22, 1929, that both wells will be shut in and cease producing if and when the pressure in the well in Sec. 2 has been reduced so that it can be killed without hazard to life and property.

Bids must be a flat price per barrel stated in dollars and cents. Delivery of royalty oil, if and when accrued, will be made without cost to the Government on the SE¼, Sec. 2, and/or the NW¼ Sec. 12, for the account of the successful bidder by segregation in royalty tanks or by direct pipe line run as an undivided portion of production as the Government may elect. Payments for the royalty oil are to be made to the Register of the United States Land Office at Sacramento, Calif., on or before the 15th (fifteenth) day of each month following that in which delivery is made, the quantity and quality of the oil to be determined by tests, corrected for impurities, and the volume computed in terms of standard barrels at 60° F.

Each bid must be accompanied by a certified check payable to the order of the Secretary of the Interior in the sum of $1,000 as a guarantee that the bidder will, if successful, promptly execute a satisfactory contract and furnish a bond in the sum of $60,000 conditioned upon full and complete compliance with the terms of the contract.

The Secretary of the Interior may accept the offer of the highest bidder and reserves the right to reject all bids whenever within his judgment the interest of the United States demands.

Sealed bids are to be submitted to the Secretary, Department of the Interior, Washington, D. C., the envelop to be marked plainly "Bid on Kettleman Hills royalty oil." No bid received after the time herein fixed for submitting bids will be considered.

Additional information can be obtained from the Geological Survey, Department of the Interior, Washington, D. C., or from the field office of the Geological Survey at Taft, Calif.

(Sgd.) RAY LYMAN WILBUR
Secretary of the Interior.

February 3, 1930.

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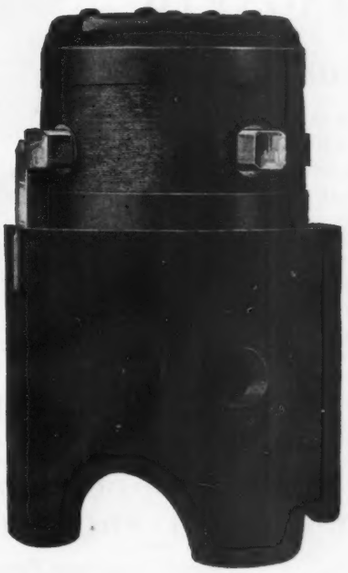

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NEW LOCATIONS

(Continued from Page 185)

the west 40 acres of the Mrs. M. Garvey 180-acre tract out of Section 291, T.E. &L. D. L. Wolf's No. 4 R. E. Hill, 1,300 feet south and 2,200 feet west of the NE cor. of Section 195, T.E.&L., being 150 feet southeast of the northwest line and 750 feet southwest of the east line of his 22.2-acre lease. Transcontinental Oil Co.'s No. 1 W. T. Donnell, 150 feet south and 356 feet west of the NW cor. of the R. Campbell Survey, A-2,297 and located in the J. T. Milinax Survey, A-2,044.

Corrections

Brown County—Paramount Oil Royalty and others' No. 2 J. W. Shore, 150 feet south and 450 feet east of the NW cor. of the J. W. Shore 132.5-acre tract out of the C. B. Banister Survey No. 627.

Callahan County—Humble Oil & Refining Co.'s No. 1 I. N. Jackson-D, 150 feet north and 3,450 feet west of the NE cor. of Section 21, E.T.R.R., and located in the W. A. Hinds Survey.

Coleman County—L. Smith's No. 1 S. E. Switzer, 165 feet north and 325 feet west of the SE cor. of the S. E. Switzer 115-acre tract out of the W. Farrish Survey No. 279.

Gray County—Sullivan and others' No. 1 A. Chapman-A, 330 feet north and east of the SW cor. of the S half of the SE of Section 7, Block 26, H.&G.N.

Hutchinson County—Smith & McDaniel's No. 1 H. C. Pitcher and others (Hill), 330 feet north and east of the SW cor. of the SE of Section 19, Block M-21, T.C.R.R. Phillips Petroleum Co.'s No. 1 Johnson Brothers-Claire, 250 feet south and 3,658 feet west of the most easterly NE cor. of the Mrs. E. T. Tumlinson Survey No. 1.

Wheeler County—Lone Star Gas Co.'s No. 1 M. Brown, at the C of the NW of the NE of Section 53, Block 23, H.&G.N. Murchison & Fain's No. 1 W. L. Cooper, 330 feet north and east of the SW cor. of the NW of Section 80, Block 23, H.& G.N.

Young County—Stump & Heydrick's No. 3 J. B. Daniels, 450 feet north and 150 feet west of the SE cor. of the south 40 acres of the E half of Section 164, T.E.&L.

NEW SOVIET REPRESENTATIVE

Peter A. Bogdanov has been elected chairman of the board of directors of the Amtorg Trading Corp. to succeed Saul G. Byron, who has been appointed Soviet trade representative to Great Britain. The Amtorg Trading Corp. is the principal company representing industrial and trading organizations of the U. S. S. R. in this country.

Mr. Bogdanov, who was formerly the head of the Soviet Supreme Economic Council, stated:

"It is a source of gratification that Soviet-American economic and technical relations have expanded so greatly during the past few years. The fact that since its inauguration Soviet-American trade has amounted to over $600,000,000, of which exports from this country made up about three-fourths, and that technical assistance agreements are in force with over 40 important American engineering and manufacturing firms, indicates the considerable significance of the economic relations established."

OIL IN SCHLESWIG

The Bremer Erdol Aktiengesellschaft, a mineral oil concern of Bremen, has just signed contracts with a number of property owners in the district surrounding Schleswig, in the Province of Schleswig-Holstein, granting the company the right to prospect for oil. Traces of oil in this district were first noticed on the surface of a small pond in the district and water from some of the wells was said to have an oily taste. This is not the first time that the possibility of oil about Schleswig has caused investigation. Four or five years ago there was a similar movement, which, however, came to naught, and it is not believed that the present activity will amount to anything.

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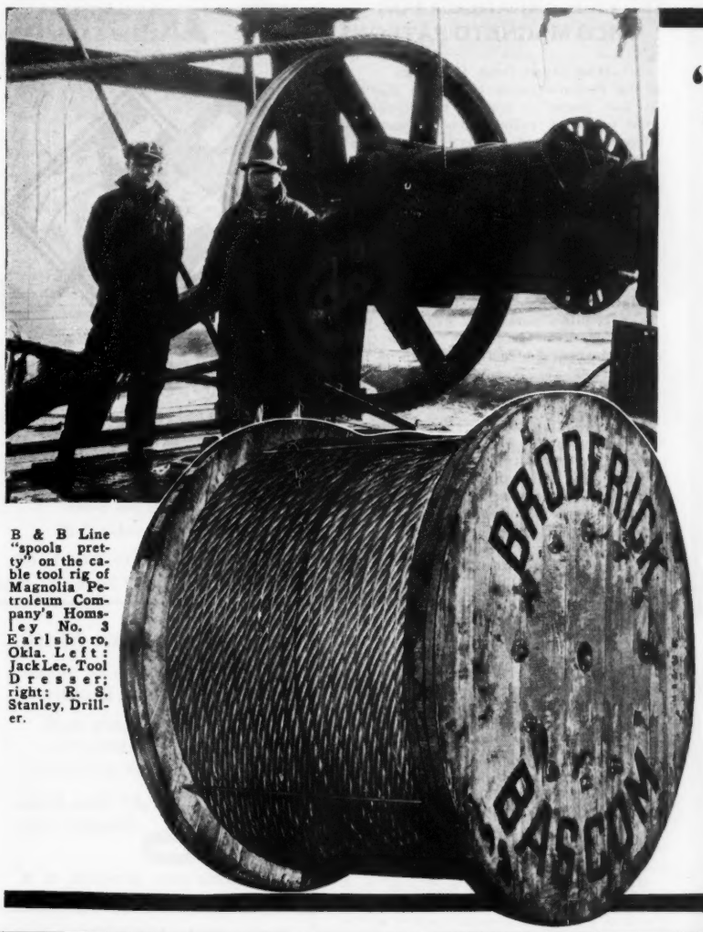

B & B Line "spools pretty" on the cable tool rig of Magnolia Petroleum Company's Homsley No. 3 Earlsboro, Okla. Left: Jack Lee, Tool Dresser; right: R. S. Stanley, Driller.

"Just Naturally A Good Line"

Listen to R. S. Stanley, Driller, calling down Jack Lee, Tool Dresser, for saying they have good luck with their *B & B Cable Tool Drilling Lines:* "Good luck, your eye! It's just naturally a good *line.*"

Naturally it is. The wire is specially drawn and put through four very strict tests. It is laid up on machinery designed to impart to the rope that *springy* quality which makes drillers call it "the easiest handling line made—a mighty pretty spooling line that you can count on to drill ahead of the tools."

Distributors in all fields handle B & B Patentsteel, Extra Strong Cast Steel and Cast Steel *Cable Tool* Drilling Lines, Sand and Pumping Lines, and invincible Yellow Strand Rotary Lines.

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St. Louis, Mo.

Factories: St. Louis and Seattle *Warehouses:* New York, Houston, Portland

BRODERICK & BASCOM DRILLING LINES

N 597

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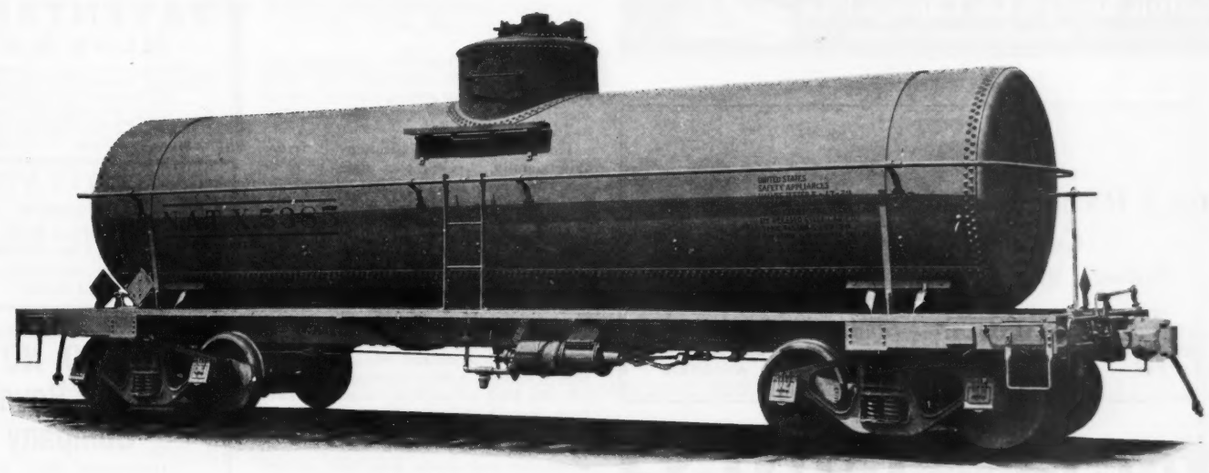

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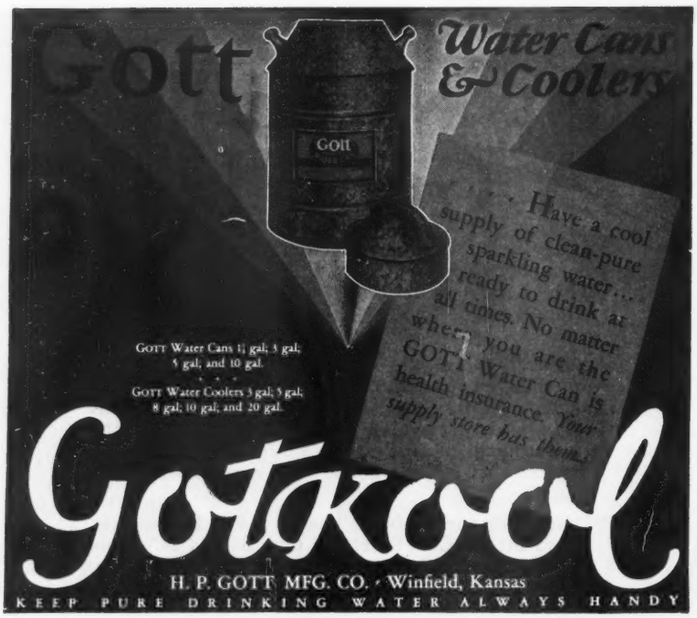
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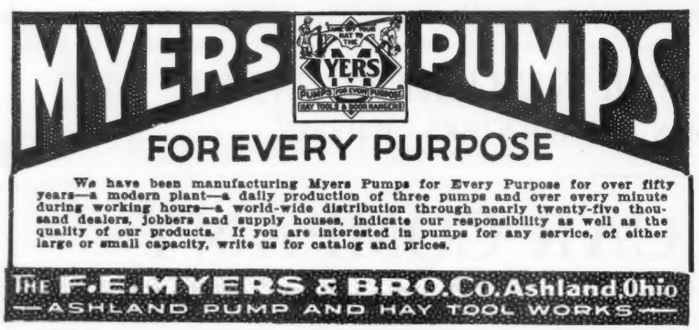
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THE F.E.MYERS & BRO.CO. Ashland Ohio
ASHLAND PUMP AND HAY TOOL WORKS

SERVICE ARRANGED FOR WICO MAGNETO PATRONS

(Continued from Page 92)

in the Seminole area the Wico Electric Co. has placed a special representative there to make calls upon all users of Wico equipment at regular intervals and inspect their machines. A stock of genuine Wico spare parts will also be kept in Seminole.

In designing the Wico type "R" and "OC" magnetos every care has been exercised in making these machines simple with the fewest number of moving parts possible, and every part is built out of specially selected and treated metal. These genuine parts are available only direct from the factory at Springfield, Mass., through the factory branch in Tulsa, or from the National Supply Companies and other supply companies in the various fields.

In building up this service system the Wico Electric Co. had in mind being in position to serve its customers promptly and properly and suggests that a customer who is having trouble with his magneto send it to one of these places for overhauling. The service includes immediate delivery of another magneto of the same type as the one sent in for repair.

The Tulsa factory branch offers an additional service to the user in that it will make immediate shipment of a replacement magneto to a customer who notifies the branch that he is sending in his magneto for inspection. For instance, if a customer in Healdton, Enid, or any other point in this Mid-Continent territory found his magneto in trouble, or had used it the specified time recommended without having it inspected, he wires or writes the Tulsa factory branch that his machine is on the way to Tulsa and the same day the notice is received another magneto of the same type is shipped out of Tulsa to the customer.

Executives, production engineers, purchasing agents and others interested are urged to give serious consideration to this service that has been specially arranged for them by the Wico Electric Co. and make use of it, preferably at intervals of 6 to 9 months. If this kind of service is used it has been found that the average upkeep charge for work and parts will be about $4.60 for each magneto per year, little enough when it is considered that this represents the present selling price of about 3 bbls. of 36° A.P.I. gravity oil.

A careful check of this system of upkeep made by the manufacturers shows that it is giving an average use of 9 to 12 months for the magneto without overhauling.

However, the Wico Electric Co. issues this friendly warning, that spurious parts for Wico igniters are being offered for sale in the oil fields. A close examination of many of these parts shows them to be decidedly inferior to genuine Wico parts in workmanship and material. Wico users are warned against the use of spurious parts in their magnetos as the results obtained will not be satisfactory.

Like all other pieces of good equipment Wico magnetos work best when fitted with genuine parts and when the inspection is done in a shop especially equipped for this kind of work by men who have been factory-trained. This is just the kind of service that can be had through the Tulsa factory branch, and those oil companies and others who have availed themselves of it now find that their magneto troubles are reduced to a minimum.

To bring about these satisfactory results it is necessary for everyone from the executive down to the field lease man to co-operate and work on some very definite plan, and the Wico representatives are glad at any time to explain their ideas as to what this plan should be and their recommendations are based upon some very definite records kept by themselves and many of the major oil companies. These prove that operating upon this basis actually makes money for the users of the Wico magnetos and reduces shutdowns from ignition troubles to a minimum.

Improved Design

ARMSTRONG Pipe Cutters are made in all practical types and sizes. They are of the finest materials—expertly made and designed. ARMSTRONG Knife Blade Cutter Wheels, smooth or knurled edge, are made of Selected Alloy Tool Steel, accurately machined, heat treated, hardened and oil tempered. Hold their edge, cut faster, cleaner. Require less power.

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(Established April, 1920)

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Buy a Dodge Truck with assured safety to your investment. It will enable you better to serve customers and thus build goodwill and greater profits for you.

DODGE TRUCKS

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE STATEMENT FOR DECEMBER, 1929

Runs

Company—	Month (bbls.)	Dly. av. (bbls.)
Prairie P. L. Co.*	4,743,000	153,000
Gulf P. L. Co.	1,860,414	60,013
Texas P. L. Co.	764,991	24,677
Magnolia P. L. Co.	1,755,608	56,633
Empire P. L. Co.	1,710,379	55,173
Cosden P. L. Co.	891,112	28,745
Sinclair P. L. Co.*	3,131,000	101,000
Oklahoma P. L. Co.	3,245,063	104,679
Other lines*	5,549,000	179,000
Total December	23,650,520	762,920
Total November	22,612,786	753,760
Difference	1,038,034	9,160

Shipments

Prairie P. L. Co.†	6,410,734	206,798
Gulf P. L. Co.	2,075,333	66,946
Texas P. L. Co.	972,639	31,375
Magnolia Pet. Co.	2,231,518	71,984
Empire P. L. Co.	1,276,946	41,192
Cosden P. L. Co.	1,198,482	38,661
Sinclair P. L. Co.	3,548,337	114,462
Oklahoma P. L. Co.	3,227,980	104,128
Other lines*	6,138,000	198,000
Total December	27,079,969	873,546
Total November	26,807,089	893,570
Difference	272,880	20,024

Stocks

Prairie O. & G. Co.*	38,594,700
Gulf P. L. and Gypsy Oil Co.	9,922,691
The Texas Company	6,850,293
Magnolia Pet. Co.	7,594,960
Empire P. L. Co.	6,185,342
Mid-Continent Petroleum Corp.	3,421,846
Sinclair Crude Oil Pur. Co.*	19,914,000
Carter Oil Co.	9,361,892
Oklahoma P. L. Co.	3,711,384
Other companies*	24,703,000
Total December	130,257,108
Total November	131,355,426
Difference	901,682

*Estimated. †Prairie P. L. shipments include Texas crude oil and Sinclair shipments include Texas and Wyoming crude oil.

EASTERN PIPE LINE REPORT FOR MONTH OF DECEMBER

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Indiana and Michigan for November and December:

	Nov. 1929	Dec. 1929
Nat. Transit	426,302.38	451,222.47
S. W. Pa. P. L.	82,952.71	86,078.43
Eureka P. L.	357,808.48	364,779.55
Buckeye P. L. (Macksburg)	334,853.69	352,447.91
Buckeye P. L. (Cleveland)	10,941.76	9,993.96
Buckeye P. L. (Lima, etc.)	94,141.89	90,018.07
Indiana P. L.	5,047.91	4,720.28
Cumberland P. L.	176,386.64	189,528.30
N. Y. Transit	31,674.21	34,104.38
Tidewater P. L.	23,927.23	25,495.45
Cure Oil	296,627.99	277,181.96
Paragon Dev.	11,938.81	11,059.01
Stoll Oil Ref.	4,324.62	4,362.88
Bradford Trans.	387,990.83	410,395.25
Total	2,244,919.15	2,311,387.90
Daily average	74,830.64	74,560.90

Note—Paragon Refining Co. had other receipts of 172,635.39 bbls. Paragon Development had other receipts of 389.97 bbls. Indian Refining Co. had other receipts of 450,142.36 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for November and December:

	Nov. 1929	Dec. 1929
Nat. Transit	610,866.22	596,904.16
S. W. Pa. P. L.	335,147.92	328,907.79
Eureka P. L.	241,823.95	217,339.67
Buckeye P. L. (Macksburg)	200,936.77	209,875.38
Buckeye P. L. (Cleveland)	1,694.86	1,700.86
Buckeye P. L. (Lima, etc.)	1,293,017.06	895,636.25
Indiana P. L.	1,280,193.50	1,426,181.84
Cumberland P. L.	185,762.53	222,397.86
Southern P. L.	63,391.67	65,068.35
N. Y. Transit	265,488.60	164,584.79
Northern P. L.	173,230.28	201,259.03
Tidewater P. L.	324,984.88	510,737.25
Pure Oil	307,123.47	281,593.22
Paragon Ref.	192,159.25	172,635.39
Paragon Dev.	12,438.47	10,374.82
Bradford Tran.	494,038.59	468,781.60
Total	6,082,298.02	5,773,978.26
Daily average	202,743.27	186,257.36

Indian Refining Co. reported other deliveries of 428,638.08 bbls.

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of November and December:

	Nov. 1929	Dec. 1929
Nat. Transit	725,641.66	703,855.97
S. W. Pa. P. L.	526,381.77	531,541.47
Eureka P. L.	1,397,286.60	1,514,703.17
Buckeye P. L. (Macksburg)	413,588.69	476,862.16
Buckeye P. L. (Cleveland)	74,272.48	70,466.79
Buckeye P. L. (Lima, etc.)	3,181,309.11	4,286,296.85
Indiana P. L.	716,629.97	652,701.92
Cumberland P. L.	552,617.51	523,373.23
Southern P. L.	308,180.02	323,184.71
N. Y. Transit	141,455.63	216,820.01
Northern P. L.	346,327.62	437,683.56
Tidewater P. L.	1,012,222.37	868,271.09
ure Oil	20,999.86	22,924.46
Paragon Ref.	25,402.17	31,470.68
Indian Ref.	.....	156,562.07
Paragon Dev.	4,736.09	6,037.00
Tuscarora	267,510.68	267,197.45
Brad. Trans.	159,975.37	164,000.93
Total	9,868,537.60	11,253,953.46
Increase	427,436.22	1,385,415.86

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern Pipe Lines at the close of November and December showing gross stocks of the above fields:

	Nov. 1929	Dec. 1929
Pennsylvania	3,270,041.21	3,454,908.10
Lima	567,411.45	628,606.65
Kentucky	607,043.92	625,239.17
Mid-Continent	4,283,691.69	6,488,845.03
Illinois	283,720.25	44,576.48
Michigan	.....	11,778.03
Total	9,011,908.52	11,253,953.46

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1926	1927	1928	1929
January	55,630	56,209	52,904	51,749
February	60,394	61,298	57,008	51,833
March	61,644	63,247	57,485	54,252
April	63,019	60,927	56,812	58,444
May	60,580	60,284	62,067	59,902
June	61,121	62,757	58,230	58,833
July	63,206	58,674	57,144	66,087
August	61,815	60,870	57,745	66,687
September	64,639	60,285	53,487	67,315
October	161,132	147,080	58,100	76,093
November	67,774	57,275	53,865	74,831
December	58,755	53,089	52,025	74,561

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1926	1927	1928	1929
January	156,056	141,227	146,465	165,721
February	159,488	138,534	167,368	159,387
March	150,239	133,777	158,883	161,474
April	152,374	140,227	172,935	169,737
May	160,998	144,594	180,559	184,281
June	160,267	149,772	188,024	185,404
July	160,045	151,850	189,470	194,763
August	151,929	188,653	192,853	184,946
September	158,915	144,213	194,138	201,214
October	161,132	147,036	176,000	191,367
November	172,608	150,975	176,898	202,743
December	136,428	144,504	173,572	186,257

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1927	1928	1929
January	9,718,008	12,276,710	7,596,564
February	10,119,162	12,180,419	8,738,835
March	10,794,044	12,239,725	9,002,058
April	11,112,295	11,740,125	8,978,172
May	11,359,381	11,602,468	8,903,560
June	11,493,673	11,287,678	8,921,275
July	11,458,128	10,819,331	9,211,595
August	11,989,115	10,236,743	9,440,643
September	12,212,716	9,660,910	9,443,067
October	12,047,661	9,229,709	9,441,101
November	11,939,740	8,366,553	9,868,538
December	12,340,297	7,539,555	11,253,953

Franklin Pipe Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

	Runs	Shipments	Stocks
1928—			
November	2,663.53	788.47	19,426.99
December	3,053.60	3,167.53	19,426.99
1929—			
January	2,099.90	.....	19,313.06
February	2,469.47	6,873.20	17,009.23
March	3,330.82	3,595.01	16,745.04
April	4,864.07	4,243.59	17,365.52
May	2,688.59	2,455.54	17,598.57
July	2,947.62	3,329.35	4,503.48
August	2,742.72	2,889.47	4,356.74
September	2,925.71	2,897.31	4,385.11
October	3,083.59	1,754.94	5,713.76

The Illinois Field

The amount of Illinois oil run by the Tidewater Pipe Co. in December was 25,495.45 bbls. Deliveries were 116,809.60. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

	Runs	Deliveries
1930—		
January	566,676.97	608,326.86
1929—		
January	570,727.38	545,084.66
February	517,330.17	503,387.70
March	728,319.67	586,049.60
April	515,374.27	654,297.96
May	608,981.60	673,812.53
June	568,454.70	818,845.97
July	611,106.79	828,159.44
August	625,351.99	746,425.06
September	582,457.66	669,947.72
October	622,302.83	558,558.68
November	565,108.75	427,064.63

Tidewater Pipe Co., Ltd., also delivered in December 99,884.13 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
March	19,903	968	31,258	18,581	7,355	78,065	.....	.....	.....	.....	.....	78,065
April	16,667	....	32,333	13,233	2,234	64,467	.....	.....	.....	.....	7,333	65,200
May	16,226	2,416	31,326	10,806	2,129	62,903	.....	.....	.....	.....	....	62,903
June	14,866	3,167	23,100	10,300	6,100	57,533	.....	.....	.....	.....	.....	57,533
July	15,387	4,806	34,290	19,388	2,452	76,323	.....	.....	.....	.....	4,161	80,484
August	20,389	3,129	35,226	18,903	5,548	83,194	.....	.....	.....	.....	12,161	95,355
September	19,433	....	31,834	11,900	6,200	69,367	.....	.....	.....	.....	4,800	74,167
October	9,065	4,677	42,065	12,000	9,677	77,484	.....	.....	.....	.....	4,097	81,581
November	18,900	3,167	41,667	14,699	3,767	82,200	.....	.....	.....	.....	2,400	84,600
December	12,968	....	46,129	13,613	7,225	79,935	.....	.....	.....	.....	2,335	82,290

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
March	18,548	26,064	145,516	39,162	28,162	257,452	....	42,581	2,322	....	44,903	302,355
April	19,733	18,367	137,233	50,267	22,567	248,167	6,867	25,066	10,367	1,500	43,800	291,967
May	29,806	19,258	138,000	49,936	22,322	259,322	6,677	26,323	3,000	1,323	37,323	296,645
June	31,433	8,667	134,600	42,967	18,300	235,967	8,600	22,633	11,800	2,033	45,066	281,033
July	40,097	15,129	111,677	43,420	31,516	241,839	4,774	12,097	9,516	161	26,548	268,387
August	33,387	14,355	162,644	30,936	20,355	261,677	4,226	12,742	....	1,484	18,452	280,129
September	32,967	9,000	136,633	54,300	32,900	265,800	6,900	22,900	5,367	1,333	36,500	302,300
October	39,936	10,519	137,096	38,160	38,644	264,355	6,613	13,388	11,064	4,419	35,484	299,839
November	23,633	18,900	125,200	41,100	28,200	237,033	2,233	12,533	6,667	2,500	23,933	260,966
December	29,774	15,387	133,742	31,000	23,775	233,678	5,548	16,484	6,613	1,774	30,419	264,097

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1929-30—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
January:	Month	23,385,939	22,575,874	23,412,226	2,861,641	2,453,526	1,807,887	2,076,070	3,439,000	82,012,163
	Daily average	754,385	728,254	755,233	92,311	79,146	58,318	66,970	110,936	2,645,554
February:	Month	22,300,707	20,464,164	20,816,209	2,657,968	2,154,194	1,569,930	1,965,656	3,113,000	74,941,828
	Daily average	796,454	730,863	743,484	91,356	76,936	56,068	70,202	111,184	2,676,494
March:	Month	24,324,729	20,838,262	24,358,592	2,951,076	2,303,734	1,756,153	2,195,823	3,586,000	82,314,369
	Daily average	784,669	672,202	785,761	95,196	74,314	56,650	70,838	115,677	2,655,302
April:	Month	23,296,060	20,235,390	23,493,097	3,112,740	2,188,680	1,702,497	2,085,030	3,524,000	79,636,494
	Daily average	776,502	674,513	783,102	103,758	72,956	56,750	69,501	117,467	2,654,550
May:	Month	24,053,351	21,345,453	24,489,101	3,665,099	2,220,168	1,713,261	2,252,522	3,879,000	83,617,945
	Daily average	775,915	688,563	789,965	118,229	71,618	55,267	72,262	125,129	2,697,353
June:	Month	24,624,627	20,561,112	24,698,029	3,636,150	2,112,270	1,699,581	2,180,752	3,887,000	83,399,521
	Daily average	820,821	685,371	823,267	121,205	70,337	56,653	72,692	129,567	2,779,984
July:	Month	26,796,627	22,371,925	26,969,989	3,867,157	2,137,047	1,716,488	2,360,836	4,439,000	90,659,069
	Daily average	864,407	721,675	869,997	124,747	68,937	55,370	76,156	143,200	2,924,486
August:	Month	27,233,353	22,429,522	27,491,362	3,816,555	2,086,083	1,764,973	2,478,016	4,363,000	91,662,864
	Daily average	878,495	723,532	.....	123,115	67,298	56,934	79,936	140,742	2,956,866
September:	Month	26,104,264	21,299,490	26,067,065	3,780,690	1,959,720	1,718,250	2,347,020	4,075,000	87,351,499
	Daily average	870,142	709,983	.....	126,023	65,324	57,275	78,234	135,917	2,911,716
October:	Month	26,895,160	20,821,646	26,412,167	3,429,468	2,000,027	1,956,326	2,392,952	4,482,000	88,389,746
	Daily average	867,586	671,666	852,004	110,628	64,517	63,107	77,192	141,358	2,851,282
November:	Month	21,317,540	19,193,760	24,896,034	3,430,560	1,911,060	1,853,565	2,350,110	4,029,000	78,981,629
	Daily average	710,585	639,798	.....	114,352	63,702	61,785	78,337	134,300	2,632,720
December:	Month	21,705,554	20,092,876	25,609,823	3,549,066	1,917,071	1,878,352	2,378,754	4,168,100	81,299,596
	Daily average	700,179	648,156	818,394	114,486	61,841	60,592	76,734	134,455	2,622,568
Total 12 months		292,036,911	252,229,474	298,713,694	40,658,170	25,443,570	21,137,263	27,063,541	46,984,100	1,004,266,723
Daily average		800,101	691,040	818,394	111,392	69,708	57,910	74,147	128,724	2,751,416

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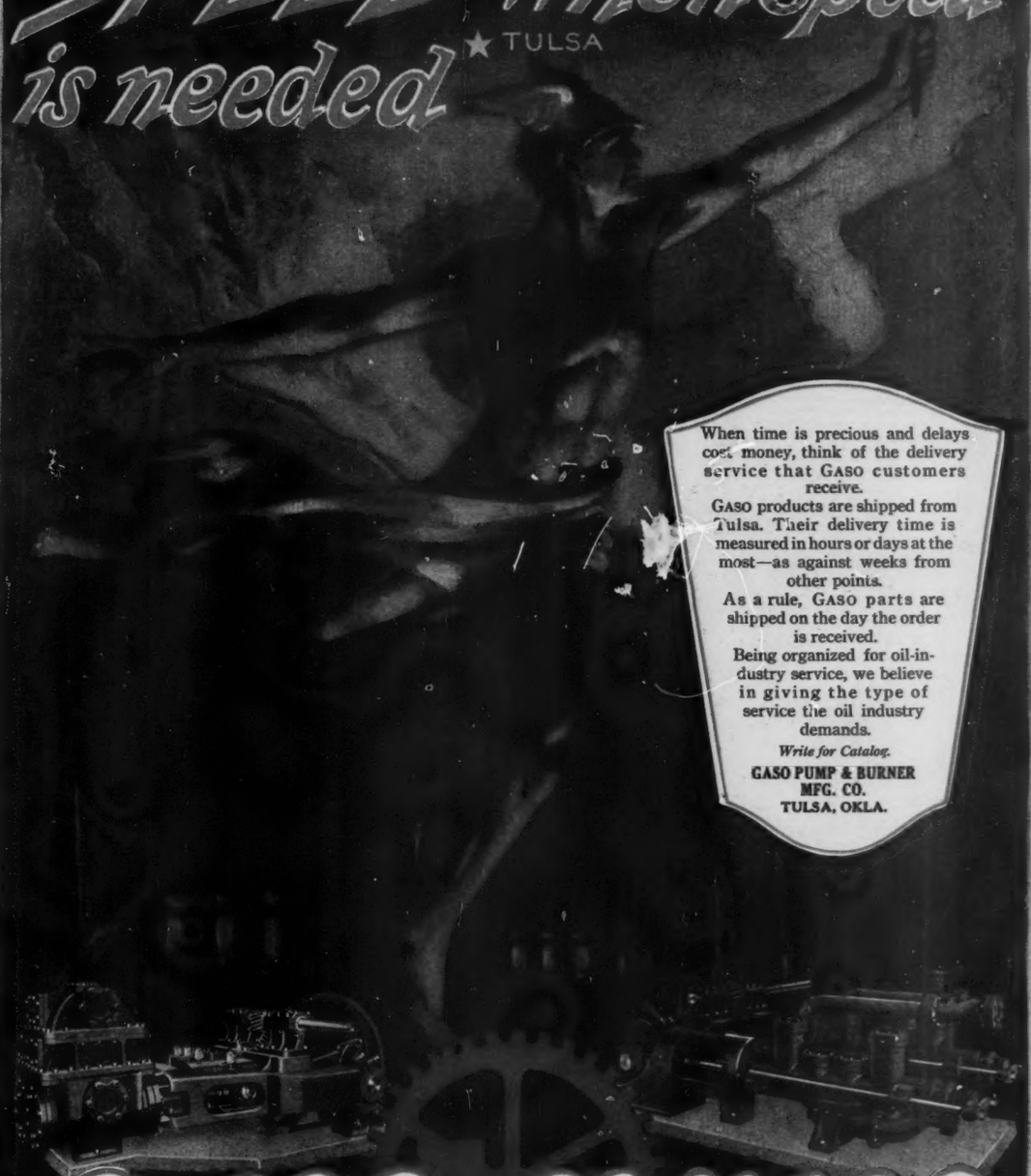

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